ABSTRACTS

WILEY **BCPT** Basic & Clinical Pharmacology & Toxicology

001 | Pharmacological and toxicological basis of food and drug cognate

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Objectives: This paper is to explore the scientific principles from the perspective of homology of food and medicine, especially the pharmacological and toxicological causes. Question: what conditions can be used to homologous of food and medicine? Which aspect of material, energy and information play a major role?

Methods: First of all, the corresponding research is carried out from the two aspects of clinical practice and basic theory. The former involves two types of practice cases. One is that food and drugs have the same direction, mainly the distinction between component proportion and quantity; the other is that food and medicine have the opposite effect, which is the essential difference, not only the composition, proportion and quantity of the substance, but also the function is extremely different. The latter involves a range of disciplines, physiology, pharmacology and toxicology of their concepts, principles, methods and examples that must be systematic combing. Furthermore, two major categories of actual cases are examined, one is direct, the typical case of life experience and clinical medicine; the other is indirect, that is, literature analysis and big data analysis. Finally, systematically compare and verify the three aspects of resistance, lesion and external sense. This method is characterized by these ways: a large probability case adopts the machine learning; a small probability case adopts the human-machine system; and exceptional case mainly plays an expert role.

Result: There are several aspects to its beneficial effects. First, a series of cases are summarized in practical experience, discussed in basic theory and supported by big data. This is far more advanced than the era of relying solely on cases. Furthermore, the related disciplines have laid a good foundation for the subsequent research, especially in combination with high-tech such as artificial intelligence era computer networks and others, to make a reasonable division of labor between human brain and computer. The advantage of efficiency cooperation can better combine the experience accumulated by Chinese medicine with the technology of Western medicine to apply to daily life needs. Finally, this subversion with the introduction of knowledge-based big production methods has greatly surpassed and systematically brought together the rational parts of the small-scale production methods that have continued to this day.

Conclusions: The significance lies in: the basic theoretical research has broadened the existing vision of pharmacology and toxicology; the clinical practical application has achieved a high degree of sharing experience, knowledge and capacity extension; daily life application is to let all kinds of people infinite; the upgrading of industrial structure is mainly to apply the latest research results of pharmacology and toxicology in the food industry and pharmaceutical industry, as well as upstream and downstream industries and supporting industries better resource configuration.

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002 | Diagnosis and treatment of cardiac arrest caused by obstruction of transnasal tracheal catheter

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Objectives: To investigate how to diagnose and treat the cardiac arrest caused by nasal tracheal catheter obstruction.

Methods: The clinical data of cardiac arrest caused by sudden tracheal tube obstruction in 5 patients who were admitted to ICU after surgery were analyzed retrospectively. The patients mainly showed sudden dyspnea, decreased oxygen saturation, cyanosis; the ventilator indicates a high-pressure alarm; the sputum tube is difficult to insert; and the resistance is very high when using airbags to swell their lungs. The patients immediately stopped their heart.

Results: Among them, four cases caused by sputum blockage, and one case caused by blood clot blockage. Medical staff immediately gave the patient chest compressions, remove and replace tracheal intubation, mechanical ventilation and epinephrine injection treatment. All 5 patients recovered successfully without sequelae.

Conclusions: In patients with nasal endotracheal intubation, the cardiac arrest followed by sudden dyspnea, possibly due to blocked sputum or blood clots. Timely diagnosis of the cause of cardiac arrest and emergency treatment of airway problems are the key to successful recovery.

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003 | Prediction of in-hospital mortality risk in intensive care unit based on deep neural network

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Objectives: Doctors and nurses are often overwhelmed by the large volumes of high-dimensional time-series monitoring sign data generated by intensive care patients. Integrating all of this information and based on artificial intelligence algorithm will bring about significant changes to the efficiency and accuracy of the medical decision-making. Deep learning is one of the most popular trends in scientific research and has attracted extensive attention at home and abroad. Therefore, the main objective of this paper is to study the deep neural network to predict the risk of mortality in critically ill patients and improve the survival rate of patients and reduce the intensity of nursing staff.

Methods: The method in this paper is to mine the required patient characteristic information from MIMIC-III database, standardize the continuous vital signs data, discrete the discontinuous vital signs data, and design a temporal deep convolution network based on the attention mechanism to predict the risk of mortality of critically ill patients in 24 hours and 48 hours. First, we extract the vital signs data of patients by using the temporal convolution network. Then, the mortality risk of patients is calculated based on the attention mechanism, and the attention weight is visualized to facilitate doctors to understand the concerns of model decision-making. Finally, it is compared with the traditional machine learning methods such as LGBM, Adaboost, logistic regression and decision tree.

Results: Compared with other models, our model proposed in this paper achieves the best performance on MIMIC-III database. The accuracy of the model is 0.86. Bayesian error rate is 0.23. The sensitivity and specificity of the temporal convolution model are 0.7 and 0.91. By visualizing the attention weight, doctor can clearly see that the model pays attention to the patient's data and time points when predicting the risk of mortality.

Conclusions: In this paper, we proposed a temporal convolutional network model based on the attention mechanism to accurately predict mortality risk of ICU patients. Our model has an excellent comprehension performance compare with the traditional machine learning algorithm. Furthermore, the attention weight of this model can visualize the attention features predicted by the model, which is of great significance to patients' decision-making and judgment.

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004 | Multi-view surgical activity recognition through a time-contrastive networks

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Objectives: Automatic recognition of surgical activity is perhaps the most clinically useful feature in context-aware computer-assisted surgery. A large number of computer vision-based methods have been widely used in the surgical activity recognition task. Prior works on this task are based on either variant graphical models such as HMMs or deep learning models such as Recurrent Neural Networks. All of these current approaches are based on a single perspective, for open surgery suffers from the occlusion problem. This paper proposes a novel extension of previous methods for surgical activity recognition from video frame, invariant of changes in Multi-View.

Methods: We train our representations using spatiotemporal feature embedding generated by a deep residual network with the triplet loss, where two simultaneous viewpoints of the same surgical activity are attracted in the same feature

embedding space, while being repelled from temporal neighbors which are often visually similar but surgical activity different. Concretely, the method, which we call time contrastive (TC) supervision, uses multi-view metric learning via a triplet loss. The core idea is that two frames (anchor and positive) coming from the same time but different viewpoints (or modality) are pulled together, while a visually similar frame from a temporal neighbor is pushed apart.

Results: We evaluate our method on JIGSAWS dataset, and our experimental results show that the proposed method in this paper performs than state-of-the-art methods on par in frame-wise accuracy.

Conclusions: Automatic analysis of surgical activity video is a rapidly expanding field. For a more detailed recording of the procedure during operation, multiple cameras in different locations are required in the operating room (OR). Therefore, this study demonstrates an approach that surgical activity recognition from video frame in Multi-View and proves the effectivity of the method with experiments on JIGSAWS dataset. As a result, our method provides good performances that it performs than state-of-the-art methods on par in frame-wise accuracy. It shows valuable potential to develop the intelligent OR and automatic surgical workflow recognition of Multi-View. Furthermore, the technology studied in this paper can also be utilized in other medical video analysis tasks of Multi-View.

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005 | Study on the characterization of skin color information for dermatological applications

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Background: The statistical characterization of skin color information is obviously important to numerous dermatological applications such as dermatologic diagnosis, skin allergy, skin plastic and cosmetic dermatology. So an accurate representation for the skin color characterization of different individuals and different body regions is of importance for different dermatological applications. This study aims to collect and analyse the skin color information of different individuals and different body regions, and take this characterization as a criterion to develop the dermatological applications.

Methods: Fifty subjects from Chinese individuals were selected to measure the skin color spectral information using the spectrophotometer device, and established a new skin color database. For each individual, four body regions were measured: left opisthenar, right opisthenar, left cheek and right cheek. A total of four hundred skin color spectral information were obtained and then calculated the $L^*a^*b^*$ values and $L^*C^*H^*$ values under the CIE D50 illuminant and CIE 1964 standard observer. Therefore, the skin color information can be expressed as values by five variates: Lightness L^*, Redness-Greenness a^*, Yellowness-Blueness b^*, Chroma C^* and Hue-Angle H^*. The differences and variation of skin color information were finally evaluated by five variates.

Results: Scatter plots of all skin color samples from the opisthenar (left and right) and cheek (left and right) are shown in Fig. 1: the a^*-b^* plane and the C^*-H^* plane. Statistical characterization of skin color information by mean values (Mean), standard deviation values (Std) and median values (Med). As Fig. 1 and Table 1 indicated, the skin color information of different body regions exists markedly different, but there are large samples overlap from the opisthenar and cheek.
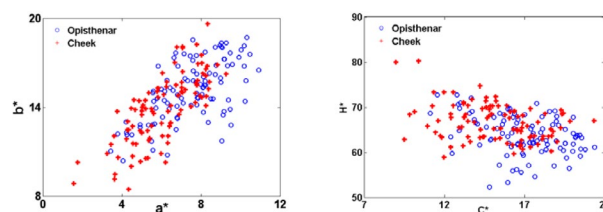

Fig. 1 Scatter plots in a^*-b^* plane and C^*-H^* plane

TABLE 1 Statistical characterization of skin color information

	Opisthenar			Cheek			All		
	Mean	**Std**	**Med**	**Mean**	**Std**	**Med**	**Mean**	**Std**	**Med**
L^*	53.26	3.46	53.45	56.44	2.71	56.58	54.85	3.48	55.09
a^*	7.52	1.72	7.76	6.05	1.58	6.05	6.79	1.81	6.80
b^*	15.15	2.02	15.20	13.88	2.30	14.02	14.52	2.25	14.62
C^*	16.96	2.35	16.97	15.18	2.60	15.19	16.07	2.63	16.32
H^*	63.79	4.32	63.50	66.67	4.03	66.66	65.23	4.41	65.14

Conclusions: This study counts and analyzes the statistical characterization of skin color information. The skin color information is affected by different individuals and different body regions, but there is the overlap gamut of large samples as the results shown. Those results provide some practical suggestions by skin color gamut to render realistic skin color images, thereby the application to dermatological applications.

006 | Evaluation of financial support efficiency of biomedical industry in China

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Objectives: Biomedical industry is an essential part of China's manufacturing blueprint in 2025 to achieve a healthy China strategy. Due to its high investment, high return and high risk, the development of biomedical industry is subject to different degrees of financing constraints. The current research focused more on western chemical medicine industry rather than traditional Chinese medicine industry. In this paper, how to obtain high-level returns through efficient financing was discussed, so as to promote the better development of biomedical industry in China.

Methods: Based on the variability of scale returns of biomedical industry, DEA-BCC model was used to analyze the financial support efficiency of 60 biomedical listed companies in China since the 1st quarter of 2016 to the 3rd quarter of 2018. Malmquist index was used to measure the dynamic characteristics of productivity changes in Chinese biomedical industry in different periods.

Results: In 2017, the average scale efficiency of the biomedical industry is 0.908, which is 0.077 higher than that of the previous year. An obvious upward trend was found but an effective state has not been yet reached. In details, 10% of listed Chinese traditional biomedical companies were DEA-efficient, 13.3% were slightly DEA-inefficient, and 76.66% were moderately and strong DEA-inefficient with a substantial increase. DEA-inefficient for those companies in the stage of increasing scale would be hindered by financial support when expanding the scale. At present, the biomedical industry in China is still in the early stage, with fewer leading enterprises and high interdependence. The shortage of funds caused by a single company will directly affect the development and growth of the industry. From the 1st quarter of 2016, the average TFP change index of the financial support efficiency of biomedical industry in China maintained at more than 1.000 with the average annual growth rate of 2.9%. The mean of efficiency change index (ech), technology change index (tech), pure efficiency change index (pech) and scale efficiency change index (sech) obtained by decomposition are 1.227, 0.863, 1.190 and 1.021 respectively, which indicated that the technical efficiency of financial support efficiency of biomedical industry has reached the effective frontier.

Conclusions: The financial support efficiency of Chinese biomedical industry is generally not high. Insufficient investment capacity in innovation and R&D and small scale of enterprises are still the bottlenecks restricting the efficiency of financial support in Chinese biomedical industry.

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007 | H_2S ameliorates the doxorubicin-induced myocardial fibrosis in rats through down-regulating autophagy

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Objectives: To investigate the effect of H_2S on doxorubicin-induced myocardial fibrosis in rats and the potential mechanism.

Methods: 40 male SD rats were randomly grouped as follows: the control group (Control); the model group (Dox); H_2S-intervention model group (H_2S+Dox); H_2S-intervention normal group (H_2S). Doxorubicin (3.0 mg/kg) was injected intraperitoneally into the rats to establish the model in Dox group and H_2S+Dox group, while NaHS (56umol/kg.d), as the exogenous donor of H_2S, was injected intraperitoneally into the rats in H2S+Dox group and H2S group. Subsequently, we executed the Masson staining to detect myocardial collagen deposition, TEM to observe the autophagosomes, and Western blotting to detect the expression of autophagy-related proteins in myocardial tissues.

Results: Compared with the control group, the Masson staining of the Dox group showed a marked disorder of myocardial fiber arrangement and a significant increase in myocardial collagen deposition. MMPs/TIMPs protein expression ratio is significantly imbalanced. And the autophagosomes were increased obviously. Beclin-1 and LC3, the marker proteins of autophagy, also significantly up-regulated ($P < 0.05$). However, in comparison with the Dox group, some improvement of myocardial fiber arrangement and a dramatical reduction of myocardial collagen deposition were found in Dox+H_2S group. And the MMPs/TIMPs protein expression ratio tends to be normal. Meanwhile, the autophagosomes were decreased obviously, the expression of Beclin-1 and LC3 down-regulated greatly ($P < 0.05$).

Conclusions: Exogenous H_2S can prominently ameliorate doxorubicin-induced myocardial fibrosis in rats, in which mechanism involved might be related to regulating autophagy and improving MMPs/TIMPs expression dysregulation.

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008 | Interdisciplinary knowledge centre construction method of medical engineering and informatics

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Objectives: Because of the corresponding foundations in natural language processing and formal understanding, expert knowledge acquisition and formal expression, and interdisciplinary teaching big data accumulation, we have the conditions to construct interdisciplinary knowledge centers. An interdisciplinary knowledge center designed to build medical engineering and informatics through information processing, artificial intelligence, and big data technologies.

Methods: The steps involve three aspects. First, medical physics and medical engineering are taken as examples, and the latest research results of information science and technology are adopted. Through the human-machine intersection method and the socialized system engineering combining education, management, learning and application, comprehensive grasping the concepts, principles, methods, examples and classic characters of each specific discipline and its branches; further, from the perspectives of medical physics, medical engineering and informatics, in traditional language engineering, knowledge engineering and software engineering. Based on the above, and use statistical machine learning and deep learning based on neural network, give full play to the advantages of computer batch processing methods, form a formal system engineering combining language, knowledge, software and hardware, and efficiently verify each specific knowledge module of the discipline and its branches; finally, through the physical objects, psychological weights (meaning value), grammar symbols and the laws or odds they follow, formal intelligent system engineering of human-machine collaboration, and make intelligent texts analysis and knowledge module finishing.

Results: It is fortunate to find that the unique charm of the above three systems engineering cannot only efficiently process the medical module of medical physics, medical engineering and informatics and its sub-disciplines, thus forming its unique interdisciplinary knowledge center. Construct a paradigm, and further a multidisciplinary knowledge center construction paradigm through appropriate promotion and popularization. For example, multidisciplinary knowledge centers for basic medicine and clinical medicine and their large branch disciplines, such as the multidisciplinary knowledge centers for pathology, pharmacology, and toxicology, all can be constructed using the above three systems engineering.

Conclusions: The significance lies in the promotion and popularization value of such purposes, methods and results. Because it not only inherits and draws on existing information processing technology, artificial intelligence technology and big data processing technology, but also innovates the unique three major system engineering, which is characterized by human-computer interaction and cooperation, machine automatic operation, Human-machine cooperation is highly collaborative and can even be used directly to mobilize the participation of teachers and students, not only to significantly improve the quality of teaching and research, and to expand the scope of services, to give full play to research universities to lead social development and optimize international exchanges. Among them, the first benefit is the knowledge module of industrial medicine physics, medical engineering and informatics and its branch disciplines.

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009 | A mendelian randomization study of the effect of vitamin a on ischemic heart disease

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Objectives: Vitamin A is vital for normal vision, epithelial integrity, operative immune system and reproduction, as well as effects on lipid metabolism. Observational studies have suggested that a U shaped overall and cardiovascular mortality relationship with vitamin A status, while vitamin A supplementation may have an inconsequential association. To address this gap, we evaluated whether individuals with genetically higher levels of vitamin A had a higher risk of ischemic heart disease (IHD), i.e., using Mendelian randomization in an available ischemic heart disease case-control study.

Methods: To achieve a large number of genetic predictors of vitamin A, we used the most recent genome-wide association study (GWAS) of blood metabolite vitamin A. We applied the genetic predictors of vitamin A to CARDIoGRAMplusC4D 1000 Genomes an IHD case (n = 60 801)-control (n = 123 504) study. The study interrogated 4.5 million variants, adjusted for study-specific covariates (e.g., age and sex) and genomic control. We used single nuclear polymorphisms (SNPs) strongly ($P < 5 \times 10^{-5}$) predicting vitamin A should only affect IHD via vitamin A by Mendelian randomization as instrumental variable analysis with genetic instruments. A fixed effects inverse variance weighted (IVW) meta-analysis of SNP-specific Wald estimates (ratio of SNP on IHD to the SNP on vitamin A), which assumes that all the SNPs are valid instrumental variables. All statistical analyses were conducted using R version 3.5.1 and the R package "Mendelian Randomization."

Results: We obtained 55 SNPs predicting blood metabolite vitamin A with $P < 5 \times 10^{-5}$ from a GWAS conducted in 1145 people of Asian ancestry. 23 Of the 55 SNPs predicting vitamin A, 19 had $r^2 < 0.9$ of which 13 were uncorrelated, all were available in CARDIoGRAMplusC4D 1000 Genomes. The Mendelian randomization odds ratio for IHD was 1.32 (95% confidence interval, 1.14–1.59; $P = 0.013$) per SD decrease in log-transformed vitamin A levels. The weighted median estimate was similar to the IVW estimate but had wider confidence intervals.

Conclusions: Consistent with experimental evidence from RCTs of vitamin A showing adverse effects on lipid profile, we could not rule out the possibility that higher vitamin A might be linked to an increased risk of IHD. This is the first study to appraise the role of vitamin A in IHD using large samples and methods which provide non-interfered assessments.

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010 | Sympathetic nerve activity enhanced following 10-day supplementation with peppermint essential oil

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Objectives: Products of peppermint essential oils are considered to have a refreshing effect, but the effects on autonomic nervous activity remain to be clarified. This study used a single-blinding of randomized controlled trials (RCT) to investigate the effects of continuous supply or inhaled peppermint essential oil for 10 consecutive days.

Methods: 46 healthy males randomly assigned to the peppermint essential oil supply group (PS group: supply 50uL peppermint oil for 10 days; 16), inhale group (PI group: inhaled 50uL peppermint oil spray for 10 days; 14) and control group (group C; 16). All subjects were required to perform a peppermint essential oil spray inhalation test before and after interventions to collected heart rate variability (HRV) parameters. After the data collection, using the one-way ANOVA and repeated measures ANOVA to compare the HRV in different timing and intervention modes ($\alpha = 0.05$).

Results: After inhalation of acute peppermint essential oil, the respiration frequency area (RFa), low frequency areas (LFa) increased significantly (RFa: 2.2 ± 0.8 vs. 2.6 ± 0.6, $P < 0.01$; LFa: 1.8 ± 0.6 vs. 2.1 ± 0.9, $P < 0.01$), but the heart rate (HR) significantly reduced (71.8 ± 13.8 vs. 68.5 ± 12.9 bpm, $P < 0.01$). Removed the peppermint oil, the RFa immediately returned to rest value, but the LFa still significantly higher than rest value. After 10 days of intervention, the low-to-high frequency ratio (LFa/Hfa) of the PS group in basal condition was significantly higher than before intervention (0.9 ± 0.1 vs. 1.2 ± 0.1, $P < 0.05$), but there was no significant difference between the PI group and C group.

Conclusions: Inhalation of peppermint essential oil spray had the active effect on autonomic nerve, and the effects of sympathetic were relatively long-lasting. However, supplement of peppermint essential oil for 10 consecutive days enhanced the basal condition of sympathovagal balance. This study recommended that use inhalation of peppermint essential oil if need short-term refreshing effect, and can use continuous supplement of peppermint essential oil for long term refreshing effect.

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011 | Using suggestive annotation and fine annotation platform to facilitate medical image AI clinical application

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Objectives: How to make medical image AI to really benefit clinic is an unsolved problem for the following two reasons. a. Annotated clinical medical data are too rare and expensive to obtain since annotating biomedical images is not only tedious and time-consuming but also can only be effectively performed by medical experts, and therefore, the algorithms always trained on public dataset cannot be applied in the clinic. b. Although some algorithms have a promising performance on some clinical data, due to large variations in biomedical images (different devices, different operators, etc.), these algorithms cannot achieve satisfactory results on a new application.
Methods: To enable medical image AI products to be applicable to each specific clinical application, we presented a new solution. First, by combining active learning and U-shape network, we employed a suggestive annotation strategy to select the most effective annotation instances from personalized data. We then exploited a fine annotation platform to alleviate annotating efforts on each instance and utilized a new criterion to quantitatively calculate the efforts from doctors. Finally, we retrained the model with annotated personalized data to attain a new high-precision model that suited the special application.
Results: We used MR brain tissue segmentation as an example to evaluate the proposed method. Extensive experiments

with the IBSR18 and MRBrainS18 Challenge datasets showed that with the proposed strategy, only 60% of the annotation instances were needed to achieve the most advanced segmentation performance, and the fine annotation platform can reduce doctor's efforts by at least 44%, 44%, 47% on cerebrospinal fluid (CSF), gray matter (GM) and white matter (WM), respectively. Meanwhile, our proposed method was proven to be effective for clinical data annotation, where the annotation workload of doctors was alleviated by at least 32% on WM and the time of annotating each clinical instance was expected to be saved by at least 64%.
Conclusions: In this study, we developed a new approach to facilitate medical image AI clinical application. Both public dataset and clinical dataset proved that our method performs well in personalized data and the cost of fine-tuning is acceptable for the annotator. Our approach combined clinical feasibility with algorithmic effectiveness and can be used directly in the clinic.

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012 | Hydrogen sulfide ameliorates rat myocardial fibrosis induced by hyperhomocysteinemia through TGF-β1/SMAD3 signaling pathway

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Objectives: To observe the effects and underlying mechanism of exogenous hydrogen sulfide (H_2S) in alleviating the myocardial fibrosis in rats induced by hyperhomocysteinemia (HHcy).
Methods: 40 male SD rats were randomly assigned into 4 groups: the control group (Control), HHcy model group (HHcy), H_2S-intervention model group (HHcy+ H_2S), H_2S-intervention normal group (H_2S). Hyperhomocysteinemia rats were induced by adding L-methionine (10 g/l) into the drinking water last for ten weeks; rats in the control group and H_2S group were given the common drinking water; sodium hydrosulfide (56umol/kg/d, lasting four weeks), as an exogenous donor of H_2S, was intraperitoneally injected into the rats in HHcy+H_2S group and H_2S group; and meanwhile, the rats in Control group and HHcy group were injected with the equal

volume of normal saline. 14 weeks later, rats were executed for observing the changes in myocardial tissue by Masson staining, immunohistochemical staining, Western blotting experiment.

Results: Compared with the Control group, we found a significantly increased collagen fiber in myocardial matrix from the Masson staining, the expression of collagen III was remarkably increased via the immunohistochemical staining in the HHcy group, decreased CSE and MMP1 expression ($P < 0.5$), and increased collagen-IV, MMP13, TIMP1, NF-κBp65, IL-6, TGF-β1 and Smad3 expression by Western blotting experiment ($P < 0.5$). In comparison with the HHcy group, we found that in HHcy+H_2S group, the collagen fiber in myocardial matrix was significantly reduced, the expression of collagen III showed an obvious reduction, the protein expressions of CSE and MMP1 were increased ($P < 0.5$), and the expressions of collagen-IV, MMP13, TIMP1, NF-κBp65, IL-6, TGF-β1 and Smad3 were all greatly decreased ($P < 0.5$).

Conclusions: H_2S can reduce the myocardial fibrosis in hyperhomocysteinemia-induced rats, which might be correlated to the down-regulation of TGF-β1/Smad3 signaling pathway, inhibiting apoptosis and reducing inflammatory reaction.

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013 | Memory alloy guided spinal recovery surgery

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Objective: The purpose of this study is to solve the conflict between uneven restoration of the vertebral body and reduction of the waypoint, attenuating the agony of patients during the unilateral pedicle approach spinal surgery (PKP).

Methods: Controllable balloon guiding technique was used to solve above conflict. Kirschner wire with memory alloy was used as PKP liquid balloon guiding device. At the balloon root of Kirschner wire, a memory alloy (such as Nickel-titanium alloy) of triangular bevel was set up, and the rest of guiding device was ordinary metal. To control the deformation of the triangular bevel memory alloy by heating and cooling at the tail part of the Kirschner wire, when temperature of which is bellow 37°C, the memory alloy is a straight line. When the temperature is just 37°C, the memory alloy exerts deformation, resulting in front metal tilts at 30-45° in specified direction, thereby guides the balloon to move to the contralateral vertebral body from the waypoint, so as to enlarge the bone cement supporting space of contralateral vertebral body. Simultaneously, the balloon outer wrapping material can insulate heat, thereby reducing the influence of body temperature.

Results: From the operation practice, by temperature controlling, the front balloon can be effectively driven, bone cement supporting space of symmetrical left and right can be established. At the same time, the balloon can be smoothly exported by heating and cooling.

Conclusions: By effectively utilize the temperature-deformation characteristics of memory alloy, making precise spinal minimally invasive surgery possible, and reducing the rate of poor recovery after surgery due to uneven distribution of bone cement.

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014 | Research on privacy protection of "Internet + Medical" mode

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Background: The rapid development of the "Internet + Medical" industry provides a convenient channel for medical staff and patients, but the resulting information security problems are gradually emerging. The privacy and security protection problems of big data itself are also reflected in the medical big data. Among them, the problem of patient privacy leakage is the most serious. Therefore, how to protect the patient's privacy data has become an urgent problem to be solved.

Methods: We have established a risk access control model based on rough set theory and fuzzy theory. On the basis of obtaining the factors that may affect the privacy leakage of patients, the key indicators and their corresponding relationship functions are determined by the discernibility matrix and the fuzzy set theory respectively. After that, the privacy leakage risk and the rule base (27 rules) between each index set are

analyzed by the expert system. Then, the rules are aggregated to obtain the association output. Finally, the result is defuzzified to get the risk of privacy leakage. We verified the reliability and accuracy of the model through simulation experiments.

Results: Three key indicators are extracted. When the requester accesses the medical information, the model firstly performs fuzzy evaluation on the three indicators and then determines the fuzzy set corresponding to each index according to the membership function and the weighted average principle. In addition, the evaluation result is corresponding to the rule base to determine the risk level of the requester ($L = [a, b]$). Finally, we use the fuzzy toolbox in Matlab to verify the validity of the model: the values of the three indicators are used as inputs in Matlab, and the output R is the actual risk value. The result of the verification is that R belongs to [a, b] and the accuracy rate is 97.6%.

Conclusions: This method solves the problem of unreliable results caused by data loss when dealing with practical problems, and can help medical institutions predict the risk of privacy leakage under different risk factors. However, the load testing of the model in a complex Internet environment and how to determine the weight of each indicator will be the focus of the next step.

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015 | Establishment of a prediction and pre-warning system for human health problems caused by space weather

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Objectives: Geomagnetic storms are a key component of space weather, which can exacerbate existing diseases and are correlated with significant increases in cardiac arrhythmia, cardiovascular disease, and so on. We intend to establish a prediction and pre-warning system based on multiple solar and space observation data.

Methods: The observed data before geomagnetic storms in the 23-24 solar cycles were analyzed retrospectively. It included flare area, solar radio spectrum, solar wind speed, space plasma density, south-north component of interplanetary magnetic field and cosmic ray flux. Compared with the occurrence time of geomagnetic storms, the prediction and pre-warning level were determined according to different observation indexes.

Results: The large area flares in optical bands can be used as the earliest prediction and pre-warning signal, which generally provided a pre-warning time of 3-5 days. The solar radio burst, as the earlier prediction and pre-warning signal, generally provided a pre-warning time of about 2 days. The solar wind speed, the spatial plasma density and the north-south component of the interplanetary magnetic field which were synchronously affected by the solar burst can be used as the later prediction and pre-warning signal with a pre-warning time of 1-2 days. Cosmic ray flux, as the latest prediction and pre-warning signal, provided a pre-warning time of less than 24 hours.

Conclusions: The prediction and pre-warning system established by multiple observation data is promising for the prediction and pre-warning of human health problems caused by space weather.

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016 | A novel approach for determining pathologic type using deep siamese neural networks

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Objectives: Medical imaging plays an important role in the diagnosis of many diseases. As a routine medical imaging examination method, CT could offer form and structure data for the pathologic analysis. However, accurate identification of pathological types requires years of clinical experience. In order to explore the application of deep learning method based on convolutional neural network in medical image recognition, combined with the relevant algorithm in computer vision research, we proposed a pathological analysis method based on Siamese network and CT images.

Methods: Our proposed Siamese network adopts the idea of multi-task learning. The network architecture ties two identical neural networks by a contrastive layer, in addition, the Softmax layer was added to the end of each subnetwork as to estimate the probability distribution. By using this structure, the model can learn a similarity metric meanwhile increasing the distance between different classes. Then, the images of different pathological types were input into the trained Siamese network to establish a pathological database. Finally, we only need to input the CT image into the Siamese network, then match the database and determine the pathological type.

Results: Compared with the common classification network, our proposed method has the characteristics of high real-time and high accuracy. Training a Siamese network from scratch maybe slow, but the training only need be done once. After the model is trained, we can use it to build different pathological databases for pathological analysis, no extra operations are required. In our work, the classification problem is converted to a similarity matching problem as to make the model have better generalization ability. We demonstrate that our approach significantly outperforms state-of-the-art techniques.

Conclusions: Using our method could analysis pathological type directly without the need for clinical diagnosis by doctors, which saves a lot of labor costs. The presented method can not only be used for pathological analysis, but also has a good generalization in other medical fields, such as injury assessment and so on. In recent years, there is a growing number of works about intelligent medicine, which attracts a lot of researchers. The field of intelligent medicine has broad development prospect and great commercial value.

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017 | H$_2$S regulates autophagy and improves myocardial fibrosis of rats fed with high fat and sugar diet by PI3K/AKT pathway

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Objectives: To explore the effects of exogenous H2S on myocardial fibrosis as well as autophagy and PI3K/AKT pathway of rats fed with high fat and sugar diet.

Methods: 40 SD rats were randomly divided into normal group (control), model group (HFSD), H$_2$S intervention group (HFSD+H$_2$S) and H$_2$S control group (H$_2$S). HFSD group and HSFD+H$_2$S group were given high fat and sugar diet to build models of rats fed with high fat and sugar diet. After the models were established successfully, HSFD+H$_2$S group and H$_2$S group were intraperitoneally injected with NaHS (56 mmol/kg/d). The rats of the four groups were sacrificed six weeks later. Deposition of myocardial collagen fibers was detected by Masson staining; changes in the ultrastructures of autophagosomes and cells were observed under transmission electron microscopy (TEM); the relative expression quantities of Col1α2 and Col3α1 gene were determined by RT-qPCR; Collagen III expression was tested by immunohistochemistry; the expression levels of autophagy-related proteins such as Beclin-1, Atg3 and Atg5 and proteins such as AKT and PI3K were determined by Western blotting.

Results: Compared with the control group, the levels of blood glucose and lipid of HFSD group were obviously elevated, and collagen deposition in myocardial interstitium was increased; vacuolization in mitochondria were observed and autophagosomes were decreased under TEM; Col1α2 and Col3α1 Mrna expression was remarkably up-regulated in myocardial tissue; the expression levels of autophagy-related protein Beclin-1, Atg3 and Atg5 were decreased, while those of protein AKT and PI3K were increased. Compared with HFSD group, collagen deposition in myocardial interstitium of HFSD+H$_2$S group was decreased, and more autophagosomes could be observed; the expression levels of protein Beclin-1, Atg3 and Atg5 were increased, and those of protein AKT and PI3K were decreased.

Conclusions: Exogenous H$_2$S can improve myocardial fibrosis of rats fed with high fat and sugar diet, and the underlying mechanism might be associated with the down-regulated PI3K-AKT signaling pathway that promotes autophagy.

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018 | A study on machine vision technology for the rehabilitation of the elderly

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Objectives: The social population tends to age, and the posture of the elderly cannot be the same as that of the younger age. It is impossible to use muscle strength and speed as

the measurement standard of exercise. This study combines the identification of biometrics and the integration of electromechanical technology with CCD and sports equipment combined with Borland. The C++ Builder software is developed to determine the color of the user's clothes for motion recognition. The historical data curve is compared through multiple training records to provide the correctness of the rehabilitation exercise for the elderly and the fun of interactive sports learning.

Methods: In this study, CCD optics are used as image capture devices. Machine vision is used in human motion analysis to include (1) image capture operations, (2) image noise processing, and (3) marker detection and recognition, (4) Mark points (including overlapping images), (5) limb calculations (calculation of angular displacement and acceleration). Develop an effective method for image pre-processing and detection of markers. According to the basic data input of age and exercise type, it corresponds to the display of the correct position of the elderly in this age. In addition, the height, weight, age, etc. of the subject can be input, and the simplified biomechanical model can be brought in as a future guest. Personalized rehabilitation content.

Results: The system includes a training machine, a PC, and an image capturing device, that is, the CCD capture action to the PC divides the image, takes out the moving object for marker analysis, and calculates the angle and acceleration of the limbs of the body, such as the user's knee. If the joint bending angle is less than 60 degrees, the voice will be used to remind the rehabilitation person to make corrections and provide the correct image assistance and game interaction as the attraction. By playing the game, slowly improve the exercise time and movement as the rehabilitation. The method allows the user's knee joint to bend to within 60 degrees during training. In addition, according to the interactive interface display of the game, it can be seen that the operator can bend the angle and record of the foot. Through long-term record and analysis, the user can improve the time and effectiveness of the exercise with the movement in the game. A large number of users to establish a complete database of sports training for the elderly, and to evaluate the basis of action comparison and training.

Conclusions: The output of this research includes new algorithms for image capture and recognition, and allows the elderly to operate through intuition. In the future, the dual CCD detects objects in three-dimensional space to perform 3D game interaction and expand in different training and Rehabilitation training is used.

019 | A study on the hydrolysis of laminaria japonica using a single enzyme

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Objectives: In this study, optimal hydrolysis conditions were investigated to maximize the production of reducing sugar by hydrolysis of seaweed, a brown algae, only with enzyme. Single enzyme hydrolysis was carried out to hydrolyze kelp into a single enzyme and to derive optimal hydrolysis conditions and enzyme mixing ratio. Mixed enzyme hydrolysis was carried out by re-examining optimal hydrolysis conditions by hydrolyzing kelp into mixed enzyme under the reset experimental conditions including all three optimal hydrolysis conditions derived from single enzyme treatment.

Methods: Seaweeds were hydrolyzed with a single enzyme to determine optimal hydrolysis conditions and enzyme mixing ratios. At this time, the conditions of hydrolysis experiment were designed by applying reaction surface analysis method with four parameters such as enzyme injection amount, reaction time, PH and reaction temperature. 1 g of kelp and 30 mL of distilled water were placed in an Erlenmeyer flask and adjusted to pH 3-7 with 0.1 N HCl or 0.1 N NaOH. The mixture was sterilized (121°C, 15 minutes) and allowed to cool in a clean bench. The enzyme was added at 1-11% (v / w) of the substrate weight and hydrolyzed at a reaction temperature of 30-70°C, a reaction time of 10-30 h, 100 rpm in a shaking incubator, the filtrate was filtered with 0.45um filter paper, and the filtrate was used as an analytical sample.

Results: As a result of hydrolysis of kelp with Celluclast1.5L, the pH and the reaction temperature were found to have a significant influence on the hydrolysis of kelp using Cellulose 1.5L. In addition, the optimal process conditions were the enzyme injection amount of 8.0%, the reaction time of 26.4 hours, the pH of 4.0 and the reaction temperature of 42.6°C, and the maximum yield of reducing sugar was estimated to be 146.6 mg/g-Laminaria japonica. Experimental results show that the yield of reducing sugar is 117.7 mg/g-Laminaria japonica. This was higher than the measured value of this study using sea tangle. These results suggest that the reducing sugar yield is low because the reagent is composed of 100% cellulose single component microparticles, while the cellulose content (2-10%) of kelp is relatively low.

Conclusions: The second model for the production of reducing sugar in seaweed by using single enzyme Celluclast1.5L is a model with high explanatory power of 88.5%, which is suitable to explain the relationship between the independent variables (Enzyme injection amount, reaction time, pH and reaction temperature) and the yield of reducing sugar. Also, the P value (0.000) was very significant ($P < 0.01$) within 1%.

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020 | Research on trust-based access control in medical cloud environment

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Objectives: The popularity of cloud technology seems to be at a bottleneck, because people are worried about losing control of data and systems which can cause unnecessary security problems. However, the application of this technology in various fields is an irreversible trend, so its security problem needs to be solved urgently. We proposed a trust-based access control model for the trust of medical cloud service providers and users in the interaction process. It is intended to filter the trusted cloud for users and prevent users from illegal activities.

Methods: By the study of the existing access control model, we proposed a trust-based access control model based on information entropy and fuzzy theory. On the basis of obtaining the trust value, the model introduces an access control mechanism to prevent the user's illegal behavior through the two-way trust evaluation of the medical cloud and the cloud user, and to filter the credibility of the cloud node. And we verified the reliability of the model through simulation and comparison experiments.

Results: In terms of time complexity, the proposed model compared with the Eigen-Trust model gradually showed its advantages as the number of samples increases. For dynamic controllability, this model was accessible to authorized users compared to the RBAC model. The resources of the RBAC are constant, while the number of accessible resources in this model changes as the user trust value changes during the monitoring cycle. It can be seen from the experimental comparison that the model had better performance as a whole.

Conclusion: The experimental simulation was carried out only in a simple operating environment, so the compression resistance of the model in a complex environment remains to be tested. How to perfect the model and ensure the security of both sides in a complex network will be the future work.

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021 | Optimum integrated information system model for strengthening physical immunity after total hip replacement arthroplasty

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Objectives: The hip joint plays an important role in walking with the joint located around the hip joint. As you get older, hip fractures can occur due to osteoporosis, poor balance, and impaired vision. Older people have to lie still for months after surgery for hip fractures. Long-term immobilization can lead to fatal complications such as lack of appetite, pressure ulcer, pneumonia and heart attack. The chances of such complications are higher because of the weak immune system compared to the younger generation. Therefore, the paper is to identify the effect of optimum integrated information system model for strengthening physical immunity after total hip replacement arthroplasty.

Methods: The data were based on 146 patients who visited orthopedics at two general hospitals from May 8 through July 20, 2018. This study is classified into 73 case groups which have applied the information system and 73 control groups that have not been applied. The study was conducted through surveys and interviews. The eating habits were measured before and after the application of the integrated information system by t-test. The practice for strengthening muscle was performed in a t-test before and after the application of the integrated information system. The persistence of physical immunity enhancement was measured the t-test significance of the case and control groups before and after the application of the information system in 10, 20, 30 and 40 days.

Results: The results obtained are as follows. Firstly, the mean score of the patients' leg numbness after total hip

replacement arthroplasty was significantly reduced than the mean score before application of the information system ($t = 2.45$, $P < 0.05$). Secondly, the muscle strength was significantly increased after the application of the integrated information system ($t = -5.18$, $P < 0.01$). Thirdly, the practice of improving physical immunity significantly increased in the case group than the control group over 20 days ($P < 0.05$). Fourthly, in rehabilitation training, there was a significant increase in the case group than in the control group after application of the information ($t = -8.49$, $P < 0.01$).

Conclusions: Therefore, it is concluded that the integrated information system is effective in improving physical immunity after total hip replacement arthroplasty. It will be a useful tool for patients to strengthen muscle of hip joint. Moreover, it will provide infrastructure deployment in the medical information field. Therefore, the integrated information system will play important roles in the prevention and treatment of hip joint.

022 | H$_2$S improves myocardial fibrosis of rats with abdominal aortic coarctation by inhibiting autophagy through down-regulating TGF-β signaling pathway

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Objectives: To explore the effects of exogenous H$_2$S on myocardial fibrosis of rats with abdominal aortic coarctation as well as autophagy and TGF-β signaling pathway.

Methods: 44 SD rats were divided into 4 groups: control group, model (AAC) group, H$_2$S intervention (AAC+H$_2$S) group, H$_2$S control (H$_2$S) group. Models of rats with abdominal aortic coarctation were built by surgical method. AAC+ H$_2$S group and H$_2$S group received an intraperitoneal injection H$_2$S (100umol/kg) daily; control group and AAC group were intraperitoneally injected with PBS in equivalent dose. Myocardial fibrosis was observed by Masson staining; autophagy and TGF-β signaling pathway, as well as the changes in the protein and miRNA expression levels of myocardial fibrosis-related proteins, were detected and observed by Western blotting and RT-qPCR.

Results: Compared with the control group, myocardial collagen fibers of AAC group were increased, myoneme of myocardial tissue had irregular arrangement, autophagosomes were significantly increased under transmission electron microscope (TEM), and the expression levels of TGF-β,

ATG3, ATG5 and microtubule-associated protein-1 light chain 3 (LC3) were up-regulated ($P < 0.05$), while those of miRNAs associated with the negative regulation of fibrosis, such as miR-1, miR-34a and miR-499-3p, were significantly decreased ($P < 0.05$). Compared with AAC group, the collagen content of A AC+H$_2$S group was evidently reduced, the arrangement of myocardial fibers was almost the same as the normal group, and the quantity of autophagosome was decreased. Furthermore, the expression levels of TGF-β, ATG3, ATG5 and LC3 were down-regulated ($P < 0.05$), while those of miR-1, miR-34a, miR-499-3p and other miRNAs were elevated than the control group ($P < 0.05$).

Conclusions: Exogenous H$_2$S can obviously improve myocardial fibrosis in rats with abdominal aortic coarctation, and the underlying mechanism might be associated with the inhibition of excessive autophagy by regulating TGF-β signaling pathway.

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023 | Effects of caffeine intake on heart rate and skin temperature during quiet and recovery period of exercise at different temperatures

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Objectives: In normal temperature, taking caffeine may help raising heart rate and core temperature. But in low temperature of environment, it still needs further evidence whether there are same effects of heart rate and skin temperature in quiet period and period of sports recovery. The research purpose is to investigate whether taking caffeine or not, cause the effects of heart rate and skin temperature in quiet period and period of sports recovery.

Methods: Eight university students age 18 to 24 who are healthy and not addict to caffeine and have no history of cardiovascular disease, was chosen according to Purposive Sampling. Design based on order balance method and single-blind experiment, each subject runs four times of measurement, executing 20 minutes of placing bicycle exercising. SPSS20.0 Statistics Software was chosen for data processing. Statistical Methods use Descriptive statistics and two-way

ANOVA to analyze the differences of time and groups. If there is interaction between two conditions, one-way ANOVA will used to verify the major effect.

Results: In the same room temperature environment, the heart rate of caffeine intake was higher in the quiet period and recovery period after exercise. However, the heart rate of caffeine intake in the low-temperature environment was significantly higher than that in the non-caffeine intake hypothermia group after 10 minutes of recovery period. Whether or not caffeine is ingested, the skin temperature at room temperature is higher than that at low temperature. In addition, when caffeine was ingested at low temperature, the skin temperature was significantly higher than that of the non-caffeine intake group at 15 minutes after exercise.

Conclusions: Caffeine intake at low or normal temperatures may affect heart rate, even delay the recovery of heart rate after exercise. Caffeine intake may increase core temperature and heart rate, which may lead to increased skin blood flow and skin temperature.

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024 | Effects of different geomagnetic activities on myocardial ischemia/reperfusion through TLR4 receptor signaling pathway

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Objectives: The occurrence and development of cardiovascular diseases are closely related to the geomagnetic activity, but the mechanism is still unclear. TLR4 signaling pathway involved in inflammatory response is closely related to cardiovascular diseases. Here, we investigate the effects of geomagnetic activities on the TLR4 signaling pathway and determine whether geomagnetic activities play a role in cardiovascular diseases through inflammatory response.

Methods: Rat models of myocardial ischemia/reperfusion were placed in simulated geomagnetic environment with different radiation intensities. It included high magnetic field environment (500nT), moderate magnetic field environment (150nT), low magnetic field environment (100nT), shielded environment (0nt) and normal environment. The mRNA and protein expression of TLR4, TRAF6, NF-κB, TNF-α, and MCP-1 in rat myocardial tissue were detected after 24 h.

Results: Our study indicated that the mRNA and protein expression of TLR4, TRAF6, NF-κB, TNF-α and MCP-1 in the low magnetic field environment were lower than those in others groups ($P < 0.05$). In addition, the mRNA and protein expression in the high magnetic field environment were higher than those in other groups ($P < 0.05$). The mRNA and protein expression in the moderate magnetic field environment were higher than those in the normal environment ($P < 0.05$), and the mRNA and protein expression in the normal environment were higher than those in the shielding environment ($P < 0.05$).

Conclusions: Our finding suggests that geomagnetic activity regulates myocardial ischemia/reperfusion via TLR4 inflammation signaling pathway. High magnetic field environment promotes the development of inflammation, and low magnetic field environment inhibits the development of inflammation. This will be applied to the prevention and treatment of cardiovascular diseases during geomagnetic storms.

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025 | Spectral characterization of human skin color information for medical applications

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Background: Accurate human skin color information is extremely effective for medical applications including skin health assessment, skin disease diagnosis, cosmetic efficacy assessment and skin color mapping for plastic-surgery. Compared with colorimetric color information of human skin, spectral color information, defined as the human skin "fingerprinting," can be accurate to skin image rendering under arbitrary illuminants and observers. So the spectral characterization of human skin color information can be counted for different medical applications. The purpose of this study

collects and evaluates the human skin spectral color information of gender difference and body area difference, and takes an important guide for the medical applications.

Methods: A total of sixty-four subjects from Chinese ethnic were used to participate this study, including thirty-four males and thirty females. Four body areas at the opisthenar (left and right) and cheek (left and right) used the spectrophotometer device to measure at 10-nm intervals ranging from 400 nm to 700 nm. So establishing a new Chinese skin spectral color database recorded 256 skin spectral color samples.

Results: To analysis and count the spectral difference of gender difference and body area difference, their mean and standard deviation of the skin spectral reflectance were computed separately. As Figure 1 shown, spectra of different gender and body area represent similar shape smoothly, but there exists more differences of spectral variability in the medium part of the spectrum than both ends. For both male and female, the mean of the cheek skin spectral reflectance shows the higher values than the opisthenar skin spectral reflectance. For both opisthenar and cheek, the mean and standard deviation of the female skin spectral reflectance are always above the male skin spectral reflectance. Table 1 shows the root mean square error (RMSE) was calculated for different gender and different body area. Largest spectral variation exists between male and female in body area difference (e.g. RMSE = 0.0308 in Cheek, 0.0275 in opisthenar), and the smallest one between male and all (e.g. RMSE = 0.0129 in Cheek, 0.0145 in opisthenar).
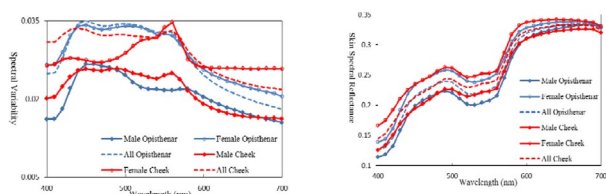

Fig. 1 The mean and standard deviation of the skin spectral reflectance

TABLE 1 RMSE of skin spectral for different gender and different body area

RMSE	Male vs. Female	Male vs. All	Female vs. All
Opisthenar	0.0275	0.0129	0.0146
Cheek	0.0308	0.0145	0.0164

Conclusions: This study counts and analyzes the statistical characterization of skin color information for gender difference and body area difference. Those results provide some practical suggestions by skin color gamut to render realistic skin color images, thereby the application to medical applications.

026 | MR-based synthetic CT generation using a conditional generative adversarial network

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Objectives: CT has a widespread application in the field of medical, but has a high radiation. MR has a good soft tissue contrast function and low radiation; in recent years, interests have been rapidly growing in the field of using MR to generate CT, which attracts a large number of researchers. There are few works in the cross-domain of artificial intelligence and medical treatment. Inspired by deep learning and convolutional neural networks in the computer vision literature, we propose a Conditional Generative Adversarial Network (CGAN) method for CT generation by using MR.

Methods: The proposed CGAN model consists of a generator and a discriminator. The generator has 15 layers interleaved with convolution and deconvolution layers. The detector has stronger feature analytic capability, adding the idea of cross-layer connection. The discriminator consists of 5 convolution layers used to judge whether the input image is true or false. This competitive mechanism could enhance the performance of the generator. The model is trained to learn a direct end-to-end mapping from MR images to their corresponding CT images. Each CT generated is compared against the real CT image of the same pair at the pixel level.

Results: CT image labels range from 0 to 255 and have single channel. The CGAN method was tested on 69 test subjects, the overall average means absolute error (MAE) was 2.29. The mean error (ME) and standard deviation (σ) were -5e-4 and 8.32, respectively. Training a CGAN model may be slow, but the training only need be done once. Apply a trained GAN model to generate a completely new CT image only need 0.2 ms on GPU.

Conclusions: What we propose the CGAN model is able to produce highly accurate CT images from conventional MR images in real time. Our method can not only be used for

converting MR to CT, but also has a good generalization in other medical fields, such as multi-image synthesis and image conversion of different types of medical. The combination of artificial intelligence and medical treatment can greatly promote the development of traditional medicine and save a lot of medical resources.

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027 | Preparation of diethylstilbestrol molecularly imprinted electrochemical sensor and its application for rapid detection in food safety

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Background: Diethylstilbestrol (DES) is a synthetic non-steroidal estrogen. It had been used as an animal feed additive. It can promote animal growth, so it had been widely used in animal husbandry and fishery. However, if the human body intakes of trace amount of DES through food chain for a long time, it can cause deformity and cancer. Therefore, the use of DES in animal feed is prohibited in most countries, while some farmers still abuse DES for reduction of production cost. Therefore, it is of great significance to establish a rapid and sensitive detection method for analysis of DES residues in foods.

Methods: A novel electrochemical sensor was constructed for diethylstilbestrol detection based on molecularly imprinted polymer (MIP) membranes on a modified glassy carbon electrode (GCE) with carboxyl-multi-walled carbon nanotubes and Au nanoparticles as modifying materials. P-aminothiophenol (P-ATP) and DES were assembled on the surface of the modified GCE through the formation of Au–S bonds and hydrogen bond, and the polymer membranes were formed by electropolymerization in a polymer solution containing p-ATP, HAuCl4, tetrabutylammonium perchlorate and the template molecular DES. 50% ethanol-0.1 mol/L sulfuric acid were used to elute the template molecules. The imprinted effect and analysis performance of the sensor were researched by cyclic voltammetry and differential pulse-voltammetry. And the imprinted sensor was applied to the rapid detection of DES in food.

Results: The results showed that the linear response range of the MIP sensor was 1.0×10^{-9} mol/L-1.0×10^{-6} mol/L with a good linear relationship of the linear correlation coefficient

$R^2 = 0.9991$, the limit of detection was 3.3×10^{-10} mol/L, the average recoveries of the spiked samples were between 83.1% and 97.5%.

Conclusion: The sensor has the advantages of simple operation, rapid detection, high sensitivity, low cost, strong anti-interference ability and good stability. It suitable for rapid detection of DES in real samples, and it has a good application prospect.

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028 | Effects of decaffeinated GTE before exercise on enhancing exhaustive exercise performance and energy metabolism

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Objectives: Previous studies showed that green tea extracts (GTE) are able to reduce body fat mass in mice and humans. The mechanism behind this phenomenon and GTE impact on metabolic consequences in human skeletal muscle remains unclear. Therefore, the purpose of the study was to investigate whether single-dose administration of green tea extracts (GTE) would enhance subsequent exercise performance, and the effect of second GTE supplementation immediately after exercise on substrate oxidation during exercise recovery periods.

Methods: Eleven recruited healthy male performed a cycling exercise at 60% Wmax until exhaustion follow either 1500 mg GTE or placebo capsule with a 300 kcal breakfast meal, then second GTE /placebo administration immediately after exhausting exercise under a single-blinded cross-over design. Heart rate data, blood and gaseous exchange samples were collected during the experimental period. Student's paired t-test was performed to compare the differences in the exercise time to exhaustion at 60% Wmax and total energy expenditure. Other variables were assessed using repeated measures (trial × time) analysis of variance with Bonferroni post hoc test.

Results: 1) Acute GTE supplementation enhanced exhausting time in ergometer cycling test ($P < 0.05$); 2) second GTE administration immediately after exhausting exercise will affect energy metabolism reliance on fat oxidation, based on gaseous exchange sample and serum non-esterified fatty acid concentration. In addition, serum ammonia level was significantly higher immediately after exercise in GTE trial ($P < 0.05$). However, GTE significantly lowered serum ammonia concentration at 180 min during recovery period. Blood glucose, serum urea and creatine kinase, and total energy expenditure were unchanged between GTE/placebo trials.

Conclusions: GTE enhances exhausting exercise performance; post-exercise GTE administration increases energy reliance on fat oxidation.

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029 | Quantitative measures of cardiopulmonary interaction through disentangling of respiration sinus arrhythmia

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Objectives: Different measures of heart rate variability and particularly of respiratory sinus arrhythmia have been widely used in research and clinical applications. We present a technique based on spectral G-causality that enables disentanglement of the RR intervals series into the respiratory-related component, R-HRV, and the rest, NR-HRV. As a universal prepossessing technique, this approach enables researchers to focus on certain particular properties of the HRV data. Furthermore, $G(f)$, which we proposed in this paper, is proved to be an effective index of the cardiopulmonary interaction.

Methods: We collected one-lead electrocardiogram (ECG) and respiratory signals in four status of 20 minutes each: rapid breathing, resting, sleeping and HRV biofeedback from 30 healthy adults in their ages between 20 and 30. Inspired by the ideas from the theory of Granger causal connectivity

analysis in neuroscience, we use spectral G-causality to perform a nonlinear decomposition of the heart rate variability into the respiratory-related component (R-HRV) and the rest (NR-HRV) and come up with an index of cardiopulmonary interaction $G(f)$. This method has significant physiological significance in frequency domain.

Results: Compared to HRV analysis and Cardiopulmonary Coupling (CPC) index, $G(f)$ expresses the cardiopulmonary interaction in frequency domain. It has a strong reference in full frequency band and eminent repeatability. It can be used to analyze human body in different physiological states, get the cardiopulmonary coupling value accurately, and analyze the regulation process of human sympathetic and parasympathetic nerves. NR-HRV, as the part of HRV that removes respiratory components, can reflect other neurohumoral regulation processes more clearly.

Conclusions: This technique can be exploited as a universal prepossessing tool, both for the analysis of respiratory influence on the heart rate as well as in cases when effects of other factors on the heart rate variability are in focus. On the other hand, $G(f)$ is capable to measure the cardiopulmonary interaction quantitatively.

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030 | Analysis of decision making factors for integrating medical cloud and healthcare logistics by DANP

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Objectives: Traditionally only medical centers in developed countries have been benefactors. How to provide people living in resource-poor locations high-quality medical treatment becomes a critical issue. On April 25, 2018, the State Council of China issued the "Internet of things + Healthcare" document. It advocated strengthening the development of cloud medical care and improving the healthcare quality for Chinese people. This study starts with constructing the hierarchical structure consisting of the factors that affect the integration of medical cloud and pharmaceutical logistics operations. When DEMATEL-based Analytic Network Process (DANP) is employed to calculate the weights among factors, we can find out the key success factors. Our findings can provide hospitals and

pharmaceutical companies as a basis in formulating cloud medical development strategy.

Methods: This study is based on SF Holdings. The experimental period is from August 1, 2018, to November 30, 2018. Firstly, through the process of the Delphi method, the opinions of medical management experts were collected, and 15 factors affecting the integration of medical cloud and healthcare logistics operations were screened and summarized. Secondly, the questionnaire was conducted and 11 experts' assessments of the influence between every two factors were acquired. In addition, the Decision Making Trial and Evaluation Laboratory (DEMATEL) was employed to obtain the total influence values and the net influence values that could be used to draw a visual causal map. Furthermore, in order to find the relative importance of the factors, this study introduced DANP to calculate the weight for each factor when there exists interaction relationship among the factors.

Results: Reviewing the causal map and the weights for each factor, "To induct artificial intelligence (AI) into medical treatment" and "To develop intelligent healthcare logistics" are significantly higher than other factors in terms of total influence value, net influence value and relative importance. Therefore, they can be regarded as crucial factors. This result shows that the application of information technology is important in the development of supply, processing and distribution (SPD) management.

Conclusions: The integration of medical cloud and healthcare logistics operations plays a critical role in developing telemedicine. Through inducting AI and information technology applications, it not only promotes the development of innovative and accurate smart medical systems, but also brings the highest value of health information to the healthcare. Therefore, regardless of location, people can benefit.

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031 | Prediction of radiation dose distribution based on multi-CT using a deep convolutional neural network

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Objectives: Radiotherapy is an effective way of tumor treatment. To improve the level of radiotherapy, accurate radiotherapy dose distribution map is essential. In recent years, CT, MRI and other image fusion technologies have continuously injected new impetus into the external irradiation technology. In terms of both the treatment planning system and quality assurance, they are faster than the development of the whole-body radiotherapy

technology. There are few works in the cross-domain of artificial intelligence and medical treatment. Inspired by deep learning and convolutional neural networks, we propose a deep convolutional neural network (DCNN) method for prediction of radiation dose distribution based on multi-CT.

Methods: The proposed DCNN model constructs an image generator. The proposed model is trained to learn a direct end-to-end mapping from multi-CT images to their corresponding dose distribution images. The encoding part of our model follows the same architecture as the ResNet-50. Then, the decoder was constructed according to the structure of the encoder. Finally, we adopt the idea of Unet (connection layer) as to use the upper features more effectively and make it easier to reconstruct image details. Each dose distribution map generated is compared against the real dose distribution image of the same pair at the pixel level.

Results: Dose distribution images label range from 0 to 255 and have single channel. The DCNN method was tested on 764 test subjects, and multiple CT images were integrated into the channel dimension as input. The overall average means absolute error (MAE) was 0.99. The mean error (ME) and standard deviation (σ) were 0.13 and 4.55, respectively. Applying a trained model to generate a dose distribution images based on multi-CT images only need 0.25 ms on GPU.

Conclusions: Our proposed method can generate dose distribution images rapidly by using multi-CT images, it saves a lot of medical resources and additional treatment costs. Our method can not only be used for prediction of dose distribution, but also has a good generalization in other medical fields, such as medical image conversion and so on. The combination of artificial intelligence and medical treatment has a broad development prospect and will attract a large number of researchers in the future.

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032 | Preparation and application of enrofloxacin imprinted sensor based on carbonylated multi-walled carbon nanotube modification

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Objectives: Enrofloxacin belongs to broad-spectrum antibiotic drugs with strong antimicrobial activity. It is a new generation of quinolones special veterinary drug for livestock and poultry.

It is widely used in the treatment of livestock and poultry bacterial diseases. However, with the increase of enrofloxacin dosage, some enrofloxacin can remain in the tissues of livestock and poultry products, it may move from animals to humans through the food chain. Many countries and organizations have set enrofloxacin maximum residue limits in animal food for protection human health. Therefore, It is imperative to develop a rapid detection method for enrofloxacin residues in food.

Methods: A glassy carbon electrode was modified by dripping method with carbonylated multi-walled carbon nanotubes as modifying materials. A novel molecular imprinted electrochemical sensor was prepared by electropolymerization on the modified electrode in sodium acetate solution (pH = 5.2) with enrofloxacin as template molecular, o-aminophenol and o-phenylenediamine as composite functional monomer. The preparation conditions of the sensor were optimized. The sensor performance was investigated by cyclic voltammetry and square wave voltammetry. And the sensor was applied to the rapid detection of enrofloxacin residues in foods.

Results: Under the optimum conditions, the linear relationship of enrofloxacin was good at the concentration range of 1.0×10^{-7} mol/L ~ 5.0×10^{-5} mol/L, the detection limit was 3.3×10^{-8} mol/L, the recoveries were between 85.61% and 96.43%, and the relative standard deviations were less than or equal to 4.24%.

Conclusion: The sensor has strong selectivity to enrofloxacin, good reproducibility and stability, and has important application value.

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033 | Effects of different amplitude and frequency vibration modes on the performance of lower limb neuromuscular with the same G value

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Objectives: To explore the acute and long-term benefits of different combination modes of vibration frequency and amplitude for lower limb neuromuscular manifestations under the same g value.

Methods: Twenty-eight healthy male college students were enrolled in the study. The independent variables were high-frequency low amplitude (HF+LA; 32 Hz/1 mm), medium-frequency amplitude (MF+MA;18 Hz/3 mm), low-frequency high amplitude (LF+HA;3 Hz/114 mm), and no vibration intervention control group (CON) training mode. The dependent variables include the countermovement jump height (CMJ), peak torque value (PT), T-reflection, H-reflection, M-wave, tactile sensitivity and muscle force control, etc. Acute effects (AE) experiment, subjects of HF+LA, LF+HA and CON were trained (vibration), and the dependent variables were tested before and after training. Chronic effects (CE) experiment, subjects (were randomly assigned to the 4 groups) were trained (vibration) for 8 weeks (3 times a week), and dependent variables were tested before and after training.

Results: In AE, there were no significant differences in PT, T/Mmax, Hmax/Mmax and muscle control between groups. CMJ height of MF + MA group was significantly improved, tactile sensation of lateral malleolus in LF + HA group was significantly improved, and tactile sensation of extramalleolus and gastrocnemius muscle belly in CON group was significantly improved. In CE, the height of CMJ in each group improved significantly; in HF + LA group, the strength output of quadriceps femoris improved significantly, T/Mmax and Hmax/Mmax decreased significantly, except for tactile sensation in midfoot, T/Mmax in LF + HA group increased significantly and was larger than that in other groups. The lower limb strength output of CON group improved significantly, Hmax/Mmax of MF+MA group increased significantly, while that of CON group improved significantly except for extramalleolus tactile sensation.

Conclusions: After HF+LA and MF+MA vibration stimulation, the excitability of the terminal cistern of the α motor neuron was decreased, the output of strength was increased, and the tactile sensitivity of the lower leg was improved significantly, while LF+HA stimulation of the muscle spindle was greater, and the excitability of the γ reflex arc was increased.

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034 | An analysis of clinical information system to prevent the recurrence of pneumothorax after pulmonary wedge resection

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Objectives: Pneumothorax is a disease that has a hole in the lungs and causes air to flow through the plural cavity. It is difficult to breathe for a short period of time, causing pain in the chest and can threaten life. Natural pneumothorax occurs in young people in their teens and twenties. Secondary pneumothorax caused by pulmonary lesions occurs after age 50. The rate of spontaneous pneumothorax recurrence in Korea is 40 to 50%. Lung wedge surgery is applicable to spontaneous pneumothorax and peripheral lung lesions. Patients with pneumothorax appear multiple recurrences in the same or other parts of the lung after pneumonectomy, so patients with pneumothorax are required to manage after pulmonary resection. Therefore, the paper analyzes the data of clinical information system to prevent the recurrence of pneumothorax after pulmonary wedge resection.

Methods: This research is 138 patients who performed pulmonary resection with pneumothorax in 2 hospitals in the metropolitan area. The data were collected by interviews and questionnaires from April 17 through July 5, 2018. The general characteristics of the subjects were analyzed by X^2 test. The difference in health practice rate after applying the clinical information system in the case and the control group was carried out by *t*-test. The recurrence rate of postoperative pneumothorax was measured four times every two weeks after clinical information system application. Breathing status was analyzed as a t-test the difference between the case and the control group.

Results: The results of the paper are as follows. Firstly, the number of case group who smoke after applying clinical information system decreased significantly compared to that of the control group ($X^2 = 4.28$, $P < 0.05$). Secondly, breathing status has been improved significantly in the case group after applying it than before the clinical information system application ($t = -5.13$, $P < 0.01$). Thirdly, the health practice rate for preventing pneumothorax recurrence has increased by 64.1%-75.6% in the case group since the application of the clinical information system. Fourthly, the pneumothorax recurrence was significantly reduced from two weeks after applying the clinical information system ($t = 7.26$, $P < 0.05$).

Conclusions: In this paper, the recurrence of pneumothorax after pulmonary wedge resection was clearly reduced through the application of clinical information system. Therefore, clinical information technology has been confirmed to be able to contribute to the treatment of patients with pneumothorax. The availability of clinical information system should be applied according to the condition of the patients with pneumothorax. The findings of this paper will contribute to improving the quality of life after the treatment of lung resection.

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035 | Oscillatory thermosolutal capillary convection of liquid bridge with mixture solution of toluene/N-hexane

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Objectives: The dynamic response law of free surface, oscillatory mechanism, and transition process for the thermosolutal capillary convection are studied numerically.

Methods: The model for thermosolutal capillary convection is established by considering the surface internal energy variation coupling with dynamic deformation of free surface via the improved interface energy conservation equation with the mass conservation level set function and reinitialization method of computing grid point classification.

Results: In this paper, the temperature and velocity fields of thermosolutal capillary convection in half-floating zone liquid bridge of the mixture solution of toluene/n-hexane with the ratio of 0.24/0.76 were analyzed by the numerical simulation. When the critical concentration difference is $\Delta C_{cr} = 0.1$ and temperature difference is $\Delta T_{cr} = 0.5°C$, the oscillatory thermosolutal capillary convection is caused by temperature difference, the oscillation form of transverse velocity on the monitoring points at the hot corner is a sine curve. In addition, when the critical temperature difference is $\Delta T_{cr} = 1.0°C$, the temperature at hot corner occurs irregular oscillation.

By comparing the onset times of dimensionless temperature oscillation on the different monitoring points, the temperature at the monitoring point "c" first oscillates, and the onset of temperature oscillation at the point "c" is roughly 0.02s earlier than that at other monitoring points. The onset of temperature oscillation at the point "a" is slightly lags behind that at the point "b."

From observing the temperature and velocity oscillation at the hot corner, the average oscillating periods of transversal velocity at three monitoring points are T ≈ 0.04s, and the

onset of transversal velocity is basically the same, $t \approx 5.53s$, which have a lag ($t \approx 0.01s$) compare with onset time of temperature oscillation.

Conclusions: The two novel physical phenomena are discovered on the study of oscillatory thermosolutal capillary convection. The first, the onset of temperature oscillation is earlier than that of transverse velocity oscillation at the hot corner. Second, the velocity oscillation presents a certain pulsation characteristic compared with the temperature oscillation characteristic. In the transforming process from the stable stage to the oscillatory stage, the coupling effects of the temperature, velocity, free surface and concentration oscillations constitute complete oscillation mechanism of thermosolutal capillary convection.

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036 | Designing of nanomaterial mesh for medical application using embedded benzene structure in an angular placement

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Abstract: In the medical field, the various treatment options to repair hernias and commendations for patients that are considering surgery for their hernias. In this connection, information wants to help patients make informed decisions about their health care and to facilitate an argument between patients and their surgeons. The proposed method helps the surgeon to get optimal mesh to insert when the patient got operated. Rapid technology development in the field of medical has drawn the attention towards the design of nanomaterial-based mesh structure for the person who is undergoing operation to provide additional support to weakened or damaged tissue. The benzene is considered as the base material for the formation of optimized Nano mesh. We propose an angle-based placement of benzene structures in order to strengthen the material. The benzene structure is taken in embedded form B's, where a benzene (B) structure will have another benzene structure which will be smaller than the outer one's size with the dimension of inner benzene (B_2) will be smaller than the sides of the outer benzene (B_1). The number of benzene structure inside one another will be proposed in induction order one by one such that $B_i \leq B_{i+1}$. Once the number of benzene inside the other, it is determined by placing all centre of the benzene at one fixed point. Then, the whole structure of the embedded benzenes B_i's will be placed based on the angular placement method. The proposed angular based placing of embedded benzenes B_i's in iterative methods up to 10th order by placing the embedded benzenes B_i's structure with each structure based on angular twist with different degrees between 0 degrees and 360 degrees. In order to increase the rigidity of the material and effectiveness, we can go for higher order placement of the design. The proposed mesh structure created by the angular-based placement for the design of nanosheet will be arranged in the form of snake curve to provide an optimal nanomesh sheet for the application in the field of biomedical engineering provides high flexibility to avoid further formation of hernias after post operation. **4**

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037 | Wearable device design for potential real-time heart rhythm monitoring based on new hydrogels

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Objectives: Currently, there are three kinds of heart rhythm monitoring devices commonly used clinically, which are static electrocardiogram (ECG), dynamic electrocardiogram and implantable cardiac monitor (ICM). However, these devices are inefficient for the convenient use of patient. This paper is aimed at investigating the possibility of designing a wearable real-time heart rhythm monitoring device for patient use by using new hydrogels.

Methods: Interviews with doctors and patients respectively were carried out to obtain first-hand information about the user experience of such device. Subsequently, a new hydrogel, polyvinyl alcohol (PVA) hydrogel, has been used for prototyping experiment for the device design.

Results: There are four main problems in existing heart rhythm monitoring devices:1) Static ECG and dynamic ECG, although widely accepted by patients, may fail to capture the data about arrhythmia, and ICM, although can provide real-time monitoring data for up to three years, is relatively low in acceptability due to its invasiveness. 2) The accuracy of non-implanted devices can be easily

affected by external factors and patients' movements. 3) The electrodes of dynamic ECG, which are supposed to be attached to patients' skin for three days or longer, may result in skin allergy. Also, it is inconvenient to carry the device all the time during the monitoring period. 4) The prices of dynamic ECG and ICM are too expensive for many patients. In response to the problems, the following user requirements have to be met: 1) noninvasive and real-time monitoring; 2) high accuracy and avoiding external interference; 3) comfortable wearing method and small size, and 4) reasonable price. The drawbacks of existing devices and problems are concluded to be solved, thus proving the potential needs for a real-time wearable heart rhythm monitoring device. The PVA hydrogel is a promising material for the design, which is hopeful to solve the problems. The experiments proved the new PVA hydrogel's ability to transmit electronic signal and achieve wireless monitoring, which is made into two shapes, being coin-like sheet and ring-like circle respectively. The coin-like sheet was directly attached to user's chest, while the ring-like circle was worn on user's finger. Prototyping experiment indicated that the directly attaching to chest ensures good privacy, and the appearance of ring-like circle needs to be improved to better meet user's psychological expectation.

Conclusions: This paper discusses the potential of new hydrogels in heart rhythm monitoring. The design of a wearable real-time heart rhythm monitoring device based on new PVA hydrogel, with a further developed means of wearing, can solve the problems in terms of data accuracy, comfortableness and price, thus better meets the needs of both doctors and patients.

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038 | Effects of different doses of caffeine on muscle strength and muscle soreness under EIMD

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Objectives: The current study aimed to evaluate the dose-response effects of different doses of caffeine supplementation on muscle strength (MVIC), muscle fatigue (T_{lim}), and DOMS after eccentric exercise-induced muscle damage (EIMD).

Methods: With a double-blinded, placebo-controlled independent sample design, the present study recruited 45 male college racket sport athletes. College athletes were randomly assigned to placebo, low-dose, and high-dose groups. Muscle damage was firstly induced by prior elbow flexor maximal isokinetic eccentric contraction in every subject. Next, consecutive caffeine supplementations were administered in by each subject 24 hr and 48 hr after EIMD. To investigate the effects of caffeine on EIMD-induced muscle power depletion, strength tests were performed before and after each supplementation, followed by data collection on DOMS index.

Results: No significant group by time interaction was observed across all indices. Regarding the main effects of group factor, MVIC (0.66 ± 0.20 Nm/kg) and EMG_{max} (1207.87 ± 450.98 µV) in the low-dose group were superior as compared with the placebo (MVIC: 0.64 ± 0.15 Nm/kg, EMG: 1051.23 ± 483.48 µV) and high-dose groups (MVIC: 0.64 ± 0.21 Nm/kg; EMG: 893.76 ± 399.38 µV). DOMS was significantly higher in the placebo (63.83 ± 18.69 mm) group as compared with the high-dose (58.33 ± 24.75 mm) and low-dose groups (43.33 ± 21.10 mm). T_{lim} in the high-dose group (95.03 ± 50.42 sec) was significantly higher than that in the placebo group (T_{lim}: 76.43 ± 16.17 sec). Levels of K^+ (3.69 ± 0.60 mmol/L) and Ca^{++} (10.01 ± 0.27 mg/dL) were significantly higher in the high-dose group as compared with placebo group (K^+: 4.24 ± 0.65 mmol/L; Ca^{++}: 9.72 ± 0.19 mg/dL). T/C ratios at the post-supplement and post-exercise time points were lower in the high-dose group as compared with the placebo group.

Conclusions: There was no dose-response relation between caffeine dosage (i.e., 4 g/kg, 8 g/kg), muscle strength recovery, and DOMS attenuation. Low dosage of caffeine supplement can attenuate DOMS and facilitate recruitment of motor units, which may thereby benefit MVIC performance. High dosage of caffeine supplement may promote T_{lim} performance, an indicator of muscular endurance, possibly via the attenuation of muscle fatigue induced by the release of Ca^{++} and decreased serum K^+ levels.

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039 | A pan-cancer analysis of gene expressions, mutations and methylations in telomere related genes

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Background: Telomeres maintain genomic integrity in cells, and their progressive shortening during cancer development, one is telomere shortening can exert a tumor-suppressive effect through the proliferation arrest induced by activating the kinases ATM and ATR at unprotected chromosome ends; the other is loss of telomere protection can lead to telomere crisis, which is a state of extensive genome instability that can promote cancer progression. Therefore, genomic screening for exploring the mechanisms of human telomere in cancers is important. In this study, we constructed a system pipeline to decipher the expressions, mutations, and methylations of telomere-related genes in various cancers.

Methods: Using multi-omics data including 8949 transcriptomic data, 7987 genomic data and 8889 methylation array among 24 cancer types from The Cancer Genome Atlas (TCGA) and the Catalogue of Somatic Mutations In Cancer (COSMIC), we constructed a pan-cancer analysis to identify gene expression profiles, mutation rates and methylation sites. 66 telomere and telomerase-related genes were identified from GeneCards (https://www.genecards.org/) database and PubMed (https://www.ncbi.nlm.nih.gov/pubmed/). Kaplan-Meier curves for patients with low and high expression levels of 66 telomeres and telomerase-related genes in 24 cancer types were generated.

Results: This genome-wide survey revealed that 22 telomere-related genes were differentially expressed (with fold changes of 2 or greater) between 20 tumor and paired-normal tissues. Among 24 cancer types, a lot of telomere-related genes have more than 2% mutation rates (mutation samples divided by total samples), especially in *ABL1*, *ATM*, *BLM*, *EGF*, *EGFR*, *HSP90AA*, *MTOR*, *NBN*, *SIN3A*, *TGFB1*, *TERT* and *SIN3B*. Furthermore, 16 telomere-related genes (including *AKT1*, *DKC1*, *E2F1*, *ESR1*, *EGF*, *EGFR*, *FOS*, *HUS1*, *IFNAR2*, *MTOR*, *PARD6A*, *RAD9A*, *SIN3B*, *RBBP7*, *SMG6*, and *XRCC5*) were hypermethylated (the difference in the mean β value should be higher than 0.5) in most cancer types. A prognostication scoring system was established based on the expression levels of 66 telomeres and telomerase-related genes, which could effectively predict the overall survival (n = 1487, 79 months versus 90 months, $P < 0.00001$) and disease/progression-free survival (n = 1487, 70 months versus 90 months, $P < 0.0001$) in liver cancers.

Conclusions: Our results suggest that a lot of telomere-related genes with gene expression changes may provide a clinically applicable prognostication system for various cancers.

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040 | Prognostic model of the menstrual disorders risk in reproductive age women with chronic form of parenteral viral hepatitis

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Objectives: Chronic viral hepatitis is a complex global problem and it is still far from being solved. Many researchers point out the influence of viral hepatitis at reproductive system of women. The purpose of this research is to find the most significant criteria which make possible referring women of reproductive age with viral hepatitis at risk for the development of menstrual disorders cycle.

Methods: The study involved 34 women with chronic viral hepatitis and 28 healthy women of the same age. All women underwent clinical and anamnestic examination. The functional status of pituitary-gonadal and pituitary-thyroid axis of neuroendocrine regulation was determined by ELISA assay. Statistical data analysis was conducted with software Statistica 6.1. The specifics of the use of discriminant analysis in the assessment of risk for the development of menstrual disorders cycle in women of reproductive age with viral hepatitis evaluated.

Results: Prognostic significant risk factors for the development of disturbances in the menstrual cycle were free triiodothyronine (FT3), T3/FT3 index and total testosterone/estradiol (TT/E2) ratio.

For them, the equations of the discriminant function were constructed:

$$F1 = -0.85 + 0.62 \times x1 + 0.63 \times x2 - 0.48 \times x3 + 0.48 \times x4,$$
$$F2 = -1.33 + 0.65 \times x1 - 1.03 \times x2 + 0.92 \times x3 - 1.18 \times x4,$$
where

F1 - Linear classification functions for assigning women of reproductive age, patients with chronic parenteral viral hepatitis, to the group with a normal menstrual cycle;

F2 – Linear classification functions for assigning women of reproductive age, patients with chronic parenteral viral hepatitis, to the group with menstrual disorders;

x1 – FT3; x2 – T3/FT3; x3 – Tc; x4 – TT/E2.

If the value as a result of testing was positive (F1 < F2), and the woman confirmed the presence of irregularities in the menstrual cycle, the result was recognized as truly positive, otherwise it was recognized as false negative.

If the value during testing was negative (F1 > F2), and the patient did not experience disturbances of the local cycle against the background of chronic viral hepatitis, the result was recognized as truly negative, otherwise it was recognized as false positive.

It was established that the sensitivity of the proposed prognostic model was 88.2%, specificity was 35.5%.

Conclusions: The proposed model has good prognostic features, which allow assessing the risk of menstrual disorders cycle development in women of reproductive age with viral hepatitis with an accuracy of 76.5%.

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041 | Investigating critical factors in designing intelligent medical logistics system

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Objectives: In recent years, the deep integration of the Internet and the pharmaceutical supply chain has greatly improved the efficiency and service quality of supply, processing and distribution (SPD) operations. In addition, the medical logistics links are numerous and complex. How to reduce the mistakes in the processes of transporting medicine and medical materials becomes a major issue in the health care management. This study focuses on investigating the key factors affecting the design of intelligent medical logistics system. Our findings can be as a basis when hospitals intend to develop high performance of pharmaceutical logistics system.

Methods: In order to identify the dependence and feedback relationship between various factors affecting the design of intelligent medical delivery system, this study takes Jointown Pharmaceutical Group as the research object. The experimental period is from October 2018 to January 2019.

Firstly, through literature reviews and deep interviews with experts in the health care management field, a hierarchical structure consists of 18 factors was constructed. Secondly, 10 questionnaires were conducted to acquire the experts' assessments of the influence between every two factors. Then, fuzzy decision-making trial and evaluation laboratory (F-DEMATEL) was employed to obtain the total influence values and the net influence values that could be used to draw a visual causal map.

Results: Referring to the causal map, among the 18 influencing factors in designing intelligent medical logistics system, "Improving information system performance" and "Enhancing medical transportation technology" are the top two in terms of total influence value and net influence value. Therefore, they can be regarded as crucial factors.

Conclusions: This study employs F-DEMATEL to identify the influencing factors in the design of intelligent medical delivery system. And, the two crucial factors, "Improving information system performance" and "Enhancing medical transportation technology", are explored. This result shows, on one hand, that applying information technology to the intellectual medical logistics is crucial. On the other hand, it also expresses that imports advanced transportation technologies such as multi-temperature joint distribution systems and shockproof compartments to maintain pharmacodynamic effect of drugs during transportation is important.

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042 | Detection of pulmonary tuberculosis based on convolutional neural networks

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Background: One of the diseases that occur in a critical thoracic area is pulmonary tuberculosis (PTB). Based on statistical data from the World Health Organization, it was found that roughly 1.6 million people had died from this disease. PTB was found in the lung area, called Lung Tuberculosis, most commonly features lesions that are formed at the upper lung range by a doctor. Diagnosis of preliminary PTB typically comes from the X-ray film. Machine learning is a

technique used to analyze and find existing data relationships to get the most appropriate mathematical value in order to create a pattern for decision-making. Nowadays, there are many different research techniques that use Deep Learning, many of which are utilized for a variety of commercial and engineering applications. Convolutional Neural Network (CNN) is a form of deep learning consisting of a wide range of structures that connect to each other. Nowadays, image classification with CNN solutions is a technique that provides superior effectiveness.

Objectives: (1) To investigate the efficiency of CNN techniques for detecting the lesions indicative of pulmonary tuberculosis infection from digital X-ray images. (2) To compare the performance of CNN techniques utilizing VGG-13, Resnet-34 and Alexnet to increase the effectiveness of detection for lesions indicative of pulmonary tuberculosis infection.

Methods: This research studies the effectiveness of CNN techniques using different methods such as VGG-13, Resnet-34 and Alexnet for detecting lesions of pulmonary tuberculosis infection based on digital X-ray images, such as from http://www.aylward.org, which is a site providing open access to chest X-ray images. This research uses random sampling of digital X-ray images for *experimentation* with 4400 images from 20 000 images. All images were rotated as developed by Python with Open CV framework and transform RGB image into Grey Scale to reduce the image size by training image 80% and testing images 20% from overall images. For CNN structures containing VGG-13, Resnet-34 and Alexnet, the Python with Tensorflow and Keras framework were used.

Results: The most effectiveness was found by CNN in this *experiment*. Consequently, the highest accuracy rate of 98% was found using Resnet-34, followed by the second highest accuracy rate of 97% for VGG-13 and the third-rated accuracy rate of 95% for Alexnet. The highest speed was shown by Alexnet, while second was VGG-13 and third was Resnet-34.

Conclusions: From the *experimenta*l results in this research, it was found that Resnet-34 exhibited the most effectiveness in terms of CNN structure because it was able to train and remember repeat images from the training data better than VGG-13 and Alexnet. Despite the Resnet-34 validation accuracy, it was considerably more consistent than VGG-13 and Alexnet.

043 | Influence of ankle stability difference on landing and buffering mode after forward jumping across obstacles

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Objectives: To explore the influence of different ankle stability on posture stabilization strategy and neuromuscular control of forward jumping across obstacles during landing and buffering.

Methods: Thirty-six high-level male college athletes were selected as subjects. According to the degree of ankle instability, they were divided 12 subjects into COM group, 12 into LAT group and 12 into CAI group. All subjects performed the forward jump in a random order across the target obstacle. The biomechanical parameters of lower extremities were collected by VICON three-dimensional motion capture system, KISTLER force plate and DELSYS wireless surface electromyography. One-way ANOVA was used to compare the kinematics parameters, dynamic parameters and muscle activation level of the lower extremity joints of each group at five landing phases after takeoff.

Results: 1) In the aspect of dynamic posture stabilization mechanism, CAI has a better landing buffer mode, and the landing movement characteristics and posture stabilization strategy of LAT tend to CAI; in order to reduce the risk of ankle varus sprain, CAI and LAT take ankle valgus as the main landing strategy; the flexion of the hip joint at the landing phase provides support for maintaining posture stability between CAI and LAT; 2) possible factors for repeated sprains are that ankle varus angular velocity is faster and appears earlier after landing, which may be one of the key factors for repeated ankle sprains in CAI; more hip adduction during landing may increase the risk of ankle varus in CAI and LAT; 3) as for the overall motion control strategy, because the activation ability of the long peroneal muscle is limited, the joint contraction of the ankle joint is used as the dynamic stability control of the joint in CAI.

Conclusions: Strengthen the muscle strength training of fibula longus in ankle joint to enhance the protection muscle group of ankle sprain, and strengthen the gluteus medius in hip joint to enhance the ability of hip joint to perform abduction. Increase ROM of sagittal ankle joint to promote the recovery of landing buffer function of ankle joint; use hip joint action strategy as landing buffer and trunk stabilization mode of joint application.

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044 | Research on image segmentation of multiphoton microscopic cell image based on SLIC super-pixels method

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Objectives: Multiphoton microscopy (MPM) imaging is a technique which based on two-photon excited fluorescence (TPEF) and second harmonic generation (SHG). MPM has been widely utilized for imaging structure in biology and medical because of its advantages of enhanced imaging penetration depth, reduced photobleaching and phototoxicity as well as high resolution. However, due to the low signal-to-noise ratio (SNR), blur boundaries and uneven background of MPM images, none of the existing methods can achieve exact segmentation results for the diagnosis of histiocyte. Thus the automatic segmentation based on MPM images is still a challenging issue.

Methods: In this paper, the problems of cells MPM images segmentation were discussed, and a novel multiphoton microscopy images segmentation method based on super-pixels and watershed (MSW) is presented. The proposed method uses simple linear iterative clustering (SLIC) super-pixels instead of pixels to analyze MPM images for the first time. The super-pixels segmentation based on a new distance metric combined with spatial, CIE Lab color space and phase congruency features, divides the images into patches which keep the details of the cell boundaries. Then, the super-pixels are used to reconstruct new images by defining an average value of super-pixels as image pixels intensity level. Finally, the marker-controlled watershed is utilized to segment the cell boundaries from the reconstructed images.

Results: In order to verify the effectiveness and accuracy of the proposed cell multiphoton microscopic image segmentation algorithm, this study will segment multi-group cell multiphoton microscopic image sequences. By comparing the marker-based watershed algorithm, level set segmentation method, the original SLIC segmentation algorithm and our method, a new similarity distance measure is formed by combining CIE Lab color feature, spatial distance feature and phase consistency feature to control and generate super-pixels by using our method, and it can obtain a clearer target boundary and avoid the influence of local noise, and super-pixel blocks closer to cell edges can be obtained in multiphoton microscopic images with blurred cell boundaries and low signal-to-noise ratio. Experimental results show that cellular boundaries can be extracted from MPM images by MSW with higher accuracy and robustness.

Conclusions: Aiming at the problem of cell multiphoton microscopic image segmentation, this paper proposes a cell multiphoton microscopic image segmentation algorithm based on improved SLIC super-pixel and marker watershed. The experimental results show that the proposed algorithm has high segmentation accuracy and reliability for cellular multiphoton microscopic images with complex background, serious noise interference and blurred target boundary.

045 | Reconstruction of skin spectral color information for medical application

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Background: The most accurate and complete representation of skin color information is to use its spectral reflectance, which can match skin color under arbitrary viewing environment and solve the metameric problem. Accurate skin spectral color information can be applied to the medical application, including healthcare, disease profiling, personalized treatment, Telecare, telemedicine and diagnostic imaging. However, high-dimensional skin spectral images lead to larger storage space, so spectral data compression or dimensionality reduction becomes inevitable for medical image process. To summarize, reducing spectral data

TABLE 1 Skin spectral reconstruction result

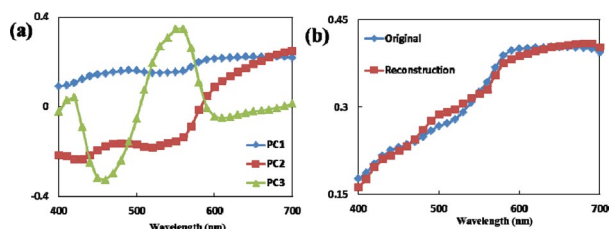| Components	RMSE			GFC			ΔE	
	Mean	Max	Min	Mean	Max	Min	Mean	Max
1	0.0136	0.0391	0.9907	0.9983	1.0000		3.2477	7.6779
2	0.0056	0.0235	0.9974	0.9997	1.0000		1.6679	6.5350
3	0.0035	0.0108	0.9993	0.9999	1.0000		0.5140	2.1610
4	0.0016	0.0093	0.9996	1.0000	1.0000		0.2222	1.4740
5	0.0009	0.0086	0.9997	1.0000	1.0000		0.1086	1.2610

Fig. 1 (a) First three principal components of the skin spectral reflectance dataset; (b) Result of skin spectral reconstruction of randomly selected sample

dimensionality and minimizing the reconstruction error will promote the development of the medical application.

Methods: This study sets up an own skin spectral reflectance dataset consisting 256 skin spectral color samples; thirty-four males and thirty females used the spectrophotometer device to measure the four body areas at the opisthenar (left and right) and cheek (left and right) at 10-nm intervals ranging from 400 nm to 700 nm. Since nature spectrum including human skin spectrum are generally smooth and they are strongly correlated across between neighborhoods spectrum, skin spectrum is adequately represented by a small number of the principal component vectors calculating from the principal components analysis (PCA) method. The spectral and colorimetric reconstruction accuracy of human skin color information calculated by the principal component vectors is evaluated and discussed in this study.

Results: To evaluate the result of skin spectral reconstruction for the different numbers of principal component used, the spectral differences (RMSE and GFC) and colorimetric differences ΔE (under D50 illuminant and CIE 1964 standard observer) between the skin spectrum and original with itself principal components are computed. As Table 1 shown, as the number of principal component increase the accurate of the reconstruction result will rise. Figure 1 shows the first three principal components of the skin spectral reflectance dataset and result of skin spectral reconstruction of randomly selected sample.

Conclusions: This study analyzes and evaluates the reconstruction result of skin spectral color information for the different numbers of principal component used. Those results provide some practical suggestions for medical application.

046 | A latency and energy efficient communication protocol for wireless body area sensor networks and internet of medical things

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Objectives: Wireless Body Area Sensor Networks (WBASNs) and Internet of Medical Things (IoMTs) have attracted much attention in recent years since there are significant needs to combine technologies with health care systems to enhance the quality of the services. In a WBASN or IoMTs, sensors are placed on human body for physiological observations. Due to natural limitations on battery as well as the requirements of real-time data processing in such networks, it is extremely important to design energy and latency efficient communication protocols for WBASNs and IoMTs.

Methods: We investigate latency and energy efficient communication protocol for WBASNs and IoMTs. We give the theoretical analysis and demonstrate superiority of our new communication protocol in terms of latency complexity. We mainly focus on efficient latency communication primitive of broadcasting. A distinguished source node initially holds a

"source" message and the objective is to design a minimum-latency communication protocol such that the source-message can be distributed to all other nodes in the WBASN or the IoMT. It is well known that computing a latency-optimal broadcasting communication schedule in such networks is NP-hard. In this work, we follow the current state-of-the-art framework with noisy communication network model and construct a super gather spanning tree in polynomial time by using the notable approach. Combining our new communication patterns with the probability theorems including Chernoff and union bounds, we derive the claimed broadcasting schedule for WBASNs and IoMTs. Meanwhile, the energy issues in terms of a number of transmissions have been also considered in our design of new communication protocols.

Results and Conclusion: We propose a new latency and energy efficient broadcasting scheme that significantly improves the currently best-known solution with a logarithmical factor in terms of the network size. We hope that our new communication protocol can stimulate future works on developments of efficient communication protocols in WBASNs and IoMTs.

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047 | Design of elderly personal health management system based on emotion recognition

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Background: Emotions are related to personal health closely. Long-term emotional problems will bring out a series of health risks to the elderly, and dramatic emotional changes will even lead to deadly diseases. Emotional management is an important part of health management.

Objectives: It is difficult to detect the mental illness at the beginning; therefore, it is urgent for the elderly to monitor the emotional state and prevent diseases through smart devices.

Methods: Firstly, this paper analyzes the data collected with wearable devices and smartphones. BP neural network is used to analyze and process the physiological signals. Then, the multi-dimensional data feature fusion method is adapted to classify and mine data based on the emotion classification model, user emotion tags and behavior tags. Through the technology of the integration of emotion recognition and

basic physiological indication identification, the real-time monitoring and reminding of emotions, and management of health data are realized. Finally, the health management system for the elderly is established.

Results: A terminal platform for the elderly's health management is constructed from four aspects: system architecture, emotion management strategy, health management function and smart home interface. The smart bracelet is used as an example: The function of the wristband terminal and the mobile terminal is planned orienting to the elderly users, and the system interface is designed based on the user's needs.

Conclusions: The system meets the needs of daily health monitoring of the elderly, but also analyze and manage emotional data, which can enhance the mental illness risk monitoring and improve the elderly's health.

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048 | Medical image preprocessing and convolutional neural network for colorectal cancer image classification

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Background: Colorectal cancer is the third leading cause of cancer-related deaths in humans that has become a widespread and increased health problem. Moreover, this disease has spread to young people. However, this issue has used medical imaging and several computer science techniques, such as artificial intelligence (AI) in terms of the state-of-the-art in deep learning to assist in the process of diagnosing the disease. The objectives of this study were to employ image preprocessing and deep learning of a convolutional neural network (CNN) to classify images of colorectal cancer and compare the validation results of the image training and test between no preprocessing and the preprocessing of colorectal cancer images.

Methods: The image dataset was collected from the CT *colonography* of The Cancer Imaging Archive (TCIA) and employed images from 328 patients, who were classified into 104

cancer patients and 224 normal patients. There were a total of 425 images comprising 201 cancer images and 224 non-cancer images. All of the images used preprocessing with a center crop that emphasized specifically on the colon. The training and test section applied a CNN named NASNet for classifying and validating the indices calculation of the average accuracy, average precision, average recall and F1 measure. In addition, all of the results of the validated indices were compared with the validation results of the original images without preprocessing.

Results: The validation results of the training and test with the CNN on no image preprocessing had an average accuracy of 88.42%, average precision of 89.65%, average recall of 89.25%, and F1 measure equal to 88.46%. The validation results from using the image preprocessing training and test with the CNN for image classification had an average accuracy score of 89.41%, average precision of 89.19%, average recall of 91.48% and F1 measure equal to 89.62%.

Conclusions: The operation of the image preprocessing by using a center crop that focused specifically on the images was able to increase the accuracy of the image classification; thus, the validation indices results proved to be better than using the original images. Furthermore, the computer science method in this paper could be applied to other medical image problems and other fields relevant to image classification.

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049 | Study on the influence of ankle stability difference on landing buffer mode of side hop

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Objectives: The aim of this study was to explore the influence of different ankle stability on posture stabilization strategy and neuromuscular control of continuous side-hop during landing and buffering.

Methods: Thirty-six high-level male college athletes were selected as participants. According to the degree of ankle instability, the participants were divided 12 into CON group, 12 into LAT group and 12 into CAI group. Participants were asked to perform 4 consecutive side hop followed with a single-leg landing, and it involves side hop-lateral (SHL) and side hop-medial (SHM). The biomechanical parameters of lower extremities were collected by VICON three-dimensional motion capture system, KISTLER force plate and DELSYS wireless surface electromyography. One-way ANOVA was used to compare the kinematics parameters, dynamic parameters and muscle activation level of the lower extremity joints of each group at five landing phase after takeoff.

Results: 1. The lower limb sagittal working muscles contracted together with the ankle muscles, which played an important role in the dynamic postural stability of CAI. The ankle valgus movement landed by SHL could reduce the risk of ankle varus sprain. 2. In SHL landing mode, adduction of CAI hip joint may cause ankle varus. The angular velocity of inversion was earlier and bigger that is the key to CAI's repeated sprain. 3. The ankle joint strategy mainly affects COP, while the hip joint strategy can change COM; the landing buffer and posture control ability of CON side hop is less stable than that of CAI; the landing mode of SHM is a high-risk action of ankle varus sprain.

Conclusions: It is possible to strengthen and train the range of ankle movement and neuromuscular control to avoid repeated injury. One-foot standing can be performed on the balance ball or balance plate to induce proprioceptive stimuli around the ankle joint, or to enhance the muscle strength around the ankle joint by using elastic bands, elastic ropes or weight loads.

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050 | Medical images super-resolution based on similarity learning

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Objectives: Medical image is important in providing intuitive information of patients' pathology and lesion location, and has great auxiliary diagnostic significance for diagnosis

and treatment of the clinical diseases. However, the quality of medical image is not accuracy by the physical conditions of the devices during the actual imaging process, which results in the problem of low resolution (LR) imaging results. So, it is necessary to research the super-resolution (SR) strategy to effectively improve the quality of images.

Methods: A new method of medical image SR method based on the similarity learning model is proposed in this paper. Firstly, this method searches the additional similarity information contained in the medical images by similarity computing algorithms. Then, based on the theory of sparse representation, the similarity of the medical image blocks contained in the image content is introduced into the high resolution (HR) reconstruction model. At the same time, the cluster algorithm is used to classify the sub-dictionary to improve the efficiency of reconstruction model.

Results: This proposed method was validated on the public Cancer Imaging Archive (TCIA) and Lung Image Database Consortium image collection (LIDC) datasets. The hardware platform is Intel Core (TM) i7, CPU870, 2.93 GHz main frequency, 16GB memory, software platform is WIN7 OS, simulation software is MATLAB 2014a. Experimental results on TCIA and LIDC demonstrated that this method is able to more effectively enhance the texture structures while preserving the tissue edges, and outperforms current state-of-the-art methods both quantitatively and qualitatively, including 45.133 mean peak signal-to-noise ratio (PSNR) and 5.77 root mean square error (RSME).

Conclusions: In this paper, we proposed a novel model method for medical CT image SR method based on similarity learning. In view of the problem of medical image super-resolution, this paper starts from the theory of sparse representation and introduces a kind of similar block structure in medical images. The similarity of medical image is added to the theory of image sparse representation, and the reconstruction process of medical image is completed by dictionary learning. According to the experiments, our method is able to achieve satisfactory results by performing this method both on visual and quantitative evaluations.

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051 | Intermittent high glucose enhances oxidative stress and apoptosis through RAGE pathway in human coronary artery endothelial cells

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Objectives: RAGE is involved in the progression of atherosclerosis and improves endothelial dysfunction and suppresses vascular inflammation. The aim of this study was to investigate the cellular apoptosis and intracellular level of oxidative stress whether mediated by the receptor of advanced glycation end products (RAGE) in human coronary artery endothelial cells (HCAECs) under constant and intermittent high glucose (IHG) conditions in vitro.

Methods: Cellular viability was evaluated by 3-(4, 5-dimethylthiazol-2-yl) 2, 5-diphenyltetrazolium bromide (MTT) assay. Apoptosis of HCAECs was analyzed by flow cytometry analysis, and the transcript and protein levels of Caspase-3 and RAGE were detected by RT-qPCR and Western blotting respectively. Oxidative stress markers (MDA and GSH) and intracellular ROS level were detected by relevant assay kit. The expression quantity of RAGE was knockdown used the shRNA mediated by lentivirus in HCAECs.

Results: The results shown that in the intermittent high glucose group, the cell viability was significantly decreased and the apoptosis rate, the expression level of ROS, MDA, GSH, Caspase-3 and RAGE were significantly increased when compared to control and constant high glucose. Furthermore, these effects can significantly inhibit by the insulin treatment in the intermittent high glucose group. Knockdown the expression level of RAGE can significantly attenuate the badly effects induced by IHG.

Conclusions: These results indicated that intermittent high glucose is more deleterious to HCAECs than constant high glucose, which may be due to the aggravation of cellular apoptosis and oxidative stress, and those effects may mediate by RAGE pathway.

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052 | Simulation of restenosis after stenting in hemodynamics

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Objectives: Restenosis after stenting restricts the development of heart stent surgery in the clinic. So this research aims to find out hemodynamics reasons for restenosis and explain the mechanism.

Methods: Obtained actual vascular parameters from MRI data of a 55-year-old healthy man. For comparative analysis, established bloodstream models with different velocity and designed codes to produced cells in and moving with the bloodstream. Finally, we compared vessel surface shear stress and flow resistance through Simulation analysis.

Results: 1) With the flowing of the blood the shear stress appears on the vessel wall, and the stress increases with the flow velocity. 2) As the roundabout of the stent, a low-stress area appears in the periptery. 3)The cells deposition in the low-stress area, and the quantity was negatively correlated to velocity. 4) The cells with large volume and high viscosity are easier to deposit in the low-stress area behind the stent.

Conclusions: Low shear stress and cell deposition lead to restenosis after stenting in terms of hemodynamics.

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053 | Classification of Parkinson's disease using NEWFM and time series pattern of computer keystroke

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Objectives: This study aims to classify Parkinson's disease patients and healthy control using neural network with weighted fuzzy membership functions (NEWFM) and pattern of computer keystroke.

Methods: Parkinson's disease patients and healthy control were classified by the experimental data from PhysioBank (https://physionet.org/physiobank/database/tappy/).

Phase space reconstruction (PSR) is based on limited data to rebuild an attractor and study the dynamics of a system. For any time series signal X_i ($i = 1, 2... N$), N means the total number of points. After selecting proper embedding dimension m and delay time τ, phase space reconstruction can be immediately conducted. The phase space can be reconstructed according to:

$$Y_j = (X_j, X_{j+\tau}, X_{j+2\tau}, \dots, X_{j+(m-1)\tau})$$

where $j = 1, 2, 3, \dots, N$-$(m$-$1)\tau$, m means the dimension of the phase space, and τ means the delay time. This study uses continuous keystrokes X_i where the x-coordinate plots X_i and the y-coordinate plots X_{i+1}.

NEWFM is a kind of fuzzy neural networks using the bounded sum of weighted fuzzy membership functions (BSWFMs). The structure of the NEWFM is composed of three layers (input, hyperbox, and the class layer). An hth input can be used as $I_h = \{A_h = (a_1, a_2, a_3, \dots, a_n), class\}$, where class means classification node and A_h is n features of an input.

Results: 3 keystroke data (hold time, latency time, and flight time) are chosen for PSR from Archived Data.zip on PhysioBank. Table 1 shows the features extracted from the PSR. The accuracy of 78.43% was obtained from the 12 features of the highest accuracy.

TABLE 1 Description of the features extracted

No	Feature extracted
1	Mean of the absolute values of keystroke data.
2	Median of keystroke data.
3	Average power of keystroke data.
4	Standard deviation of keystroke data.

Conclusions: This study uses NEWFM among many fuzzy neural networks and computer keystroke to classify Parkinson's disease patients and healthy control. The PSR is also used for time series pattern analysis of computer keystroke. The features in Table 1 were extracted using the statistical methods. Features 1, 2, and 3 in Table 1 means the frequency distributions of PSR, while feature 4 means the amount of variation in the frequency distributions.

054 | Detecting the thrombosis in carotid artery with swine model using photoacoustic tomography in-vivo

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Objectives: Ultrasound (US) device for diagnosis has the high spatial resolution in real-time and low price compared with other medical devices. However, US device provides low contrast between lesion and surrounding tissue. Optical coherent tomography also has good spatial resolution, but this device doesn't provide the functional image and limit the depth up to 1~3 mm.

In order to overcome this limitation, we developed the photoacoustic tomography (PAT) system and we detected the thrombosis in carotid artery using swine model.

Methods: Before the experiment, swine was anesthetized on surgical bed. After anesthesia, we excised the left side of respiratory tract in order to expose the carotid artery of swine. Then, using $FeCl_3$, we induced the thrombosis in carotid artery of swine. Finally, in order to detect the thrombosis using developed system, we injected the contrast agent based on ICG, which can target the thrombosis. To avoid infection for swine, we sterilized the ultrasound transducer and fiber optic light guide. We used the 780 nm with 10 mJ/cm^2, which is peak absorption coefficient with ICG.

Results: Photoacoustic signal is acquired through ultrasound transducer. We used the ultrasound device in order to detect structure of carotid artery and overlaid the PAT image that detects the thrombosis signal. In experimental group, we induced the thrombosis in carotid artery and injected the contrast-agent that can target the thrombosis. PA image detected the thrombosis lesion in the carotid artery. In control group, we didn't induce thrombosis in carotid artery but just injected the contrast-agent. In this case, we just acquired strong signal around the wall of carotid artery.

Conclusions: In this paper, we demonstrated the possibility to detect the thrombosis in carotid artery using developed PAT system. The PAT image is combined with US image in order to visualize the property of thrombosis. We used the 780 nm wavelength which is peak absorption coefficient for ICG. For experiment, we used the swine model and excised the carotid artery. In experimental group, we induced the thrombosis using Fecl$_3$ solution. Then, we injected the contrast-agent for targeting the thrombosis and acquired the image for experimental group. PAT image shows existence, position and area of thrombosis. In case of control group, we just excised and injected the contrast-agent. After injection, we acquired the PAT image for control group. In this image, we can show that signals are just generated by wall of artery. Consequently, the developed system can detect the thrombosis in the artery. We will conduct the experiment for various case not only thrombosis but also intravascular disease.

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055 | Evaluation of acute stress response based on the continuous monitoring of cardiovascular haemodynamic functions

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Objectives: This study examined the relationship between the changes of physiological parameters and the degree of depression in subjects under acute stress based on a newly developed beat-by-beat indirect blood pressure measurement system. Mean systolic and mean diastolic blood pressure, mean beat-by-beat blood pressure and mean heart rate were selected as the evaluation parameters to study the continuous response function of the cardiovascular system under the stress.

Methods: A total of 30 male freshmen were selected as subjects. According to the second edition of Baker's Depression Scale, 10 of them were in the depression-prone group and 20 of them were in the normal group. The mental arithmetic was used as a stress task, and the experiment included three periods: baseline period, stress period and recovery period. Beat-by-beat blood pressure waveforms and volume pulse waveforms of subjects were recorded throughout the course.

Results: The experimental results showed that the mean systolic blood pressure of subjects in the normal group under acute stress was 1.97 times as much as in the depression-prone group; the mean beat-by-beat blood pressure was 1.81 times, while the mean diastolic blood pressure was only 1.08 times. Thus, it is more meaningful to evaluate the correlation between acute stress and depression by continuous cardiovascular response functions, which is also the mean systolic blood pressure and mean beat-by-beat blood pressure. For the effects of acute stress on mean heart rate and heart rate variability of subjects, the normal group was 1.45 times and 2.67 times as much as the depressed group, respectively, which also showed a significant increase.

Conclusions: In this study, the continuous changes of cardiovascular parameters under acute stress confirmed the blunted cardiovascular reactions in the depression-prone group, and indicated that it was feasible to evaluate the degree of depression based on the continuous monitoring of cardiovascular haemodynamic functions.

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056 | Analysis of health-care industry network: the value of health food in the daily adjustment of menopause

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Objectives: Using the data of health-care industry to do network structure analysis to get the significance of daily adjustment of health food during menopause. 500 products were selected to conduct a survey on health-care food consumption among menopausal women, and quality of life was investigated, and statistical results were obtained. Health-care food to improve menopausal women, health conditions, have a positive effect.

Methods: the data of 500 kinds of health food in health-care enterprises should be selected for input-output survey, and the quality of life of women after menopause was analysis. The quality of life questionnaire developed by the world health organization and the input-output data of enterprises were used to investigate the quality of life and product types, so as to understand the physical condition, psychological condition, living condition and social relationship status.

Results: This paper constructs the industrial network model based on the industry association, and analyzes the following: Physical condition is evaluated in combination with physical examination materials, including pain or discomfort, fatigue, sleep quality, ability to live and work, etc. Evaluation index of psychological state: 28 items from four surveys, including thought, memory, respect, negative feeling and psychological description. The higher the score, the higher the satisfaction.

Conclusions: The analysis of menopausal women using input-output health-care food: Menopausal women is an important stage of women, not only need family attention, but also need social attention, as long as more attention to daily treatment, combined with health-care food, to get rid of sub-health is not difficulty.

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057 | Risk assessment and intervention of postmenopausal women with osteoporotic fracture

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Objectives: For postmenopausal women, osteoclasts are active due to estrogen deficiency after menopause, bone resorption increases, bone turnover accelerates, leading to rapid loss of bone mass. Therefore, postmenopausal osteoporosis is more common as the population ages. The most serious hazard of osteoporosis comes from osteoporotic fractures. Osteoporotic fractures are the main type of fractures in postmenopausal populations. More than 40% of women suffer from postmenopausal osteoporotic fractures, especially in older women, hip bones. A fracture is a catastrophic event. The most important goal of postmenopausal osteoporosis management is to prevent fractures. How to effectively predict the risk of postmenopausal osteoporotic fractures and take effective preventive measures against their risk factors is the focus of current research.

Methods: This study is based on a cross-sectional study of high-risk populations of postmenopausal women with osteoporotic fractures. The risk factors for postmenopausal women with osteoporotic fractures were studied. A retrospective cohort study was performed to compare the quantitative evaluation of calcaneus with the measurement of plantar pressure. In predicting the importance of the risk of postmenopausal osteoporotic fractures, follow-up interventions to observe the benefits of preventing osteoporotic fractures in postmenopausal women.

Results: The occurrence of falls in postmenopausal women is common and is the most common cause of fractures in postmenopausal osteoporosis. Fall is a risk factor for predicting postmenopausal osteoporotic fractures. Measuring foot pressure screening for fall risk can identify high-risk groups of postmenopausal osteoporotic fractures. BMD combined with plantar pressure measurement is effective for postmenopausal osteoporotic fractures. Predictive indicators are the best model for screening high-risk groups of fractures and are of great value in the medical management of postmenopausal osteoporosis populations.

Conclusions: Comprehensive intervention to promote post-menopausal women, improve the high-risk group of osteoporotic fractures to adopt a life behavior mode that is conducive to bone health. Behavior determines health and teaches the health knowledge of postmenopausal women through various channels, so that more people adopt a lifestyle that is beneficial to bone health to reduce and control the occurrence and development of osteoporosis.

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058 | Analysis and study on inhibition effects of medical chitin fiber products to certain kinds of bacteria

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Objectives: To study and analyze the data of in vivo antibiotic characteristics of the fabric textile products made of chitin materials based on the chitin fabric characteristics.

Methods: Four kinds of non-woven fabrics with chitin materials contents 80%, 50%, 30% and 0% were taken as the samples. And the 24 h in vivo antibiotic abilities of Staphylococcus aureus, Staphylococcus epidermidis, Enterococcus, Klebsiella, Aerobacter and Pseudomonas aeruginosa were tested for 20 groups, respectively.

Results: The 24 h in vivo antibiotic abilities for different bacteria were as follows: Staphylococcus aureus 64.33%, 42.10%, 24.87%, 0%; Staphylococcus epidermidis 62.61%, 41.63%, 25.32%, 0%; Enterococcus 58.31%, 43.27%, 21.64%, 0%; Klebsiella 55.48%, 35.62%, 20.820%; Aerobacter 60.58%, 39.28%, 25.71%, 0%, and Pseudomonas 53.29%, 30.26%, 19.76%, 0%, respectively.

Conclusions: The experiments results show that ordinary non-woven fabric has no antibiotic ability. The non-woven fabrics with chitin materials have antibiotic abilities, and the antibiotic abilities change with the chitin material contents.

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059 | Study on hemostatic and antibacterial effect of seaweed fiber as dental dressing

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Objectives: Seaweed fiber is a kind of artificial fiber, which is made from alginic acid extracted from some brown algae plants in the ocean. Some studies have shown that seaweed fiber has antibacterial effect on epidermis bacteria. In this study, the hemostatic and antibacterial effect of seaweed fiber after tooth extraction.

Methods: 187 patients with tooth extraction, in which 93 patients as observation group, 94 patients as control group. Patients in the observation group were treated with seaweed fiber for hemostasis, and patients in control group were treated with common aseptic cotton for hemostasis. The hemostatic times of wound in two groups were observed, and the total number of wound colonies was counted by XC-30 colony counter. The data of the experiment were analyzed by variance analysis.

Results: In the observation group, the average hemostasis time of patients with alginate fiber was 21.32 minutes, and the average colony count was 2332. While in the control group, the average hemostasis time was 29.65 minutes and the average colony number was 3538. The statistical analysis was carried out in two groups, and the result was $P < 0.05$, which was of statistical significance.

Conclusions: By using the sodium alginate fiber, the hemostasis time is remarkably shortened, and the total number of wound colonies is reduced. Sodium alginate fiber material is more effective than traditional hemostatic material in hemostasis and antibacterial activity. It can be used as a new material for clinical operation.

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060 | The effect of different ankle stability on vertical jump landing buffer mode during visual cognition task intervention

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Objectives: To explore the influence of different ankle stability on posture stabilization strategy and neuromuscular

control during drop-vertical jump landing and buffering (Combined with visual task).

Methods: Thirty-six high-level male college athletes were selected as subjects. According to the degree of ankle instability, they were divided 12 subjects into CON group, 12 subjects into LAT group and 12 subjects into CAI group. All subjects performed the drop-vertical jump+visual task in a random order. The biomechanical parameters of lower extremities were collected by VICON three-dimensional motion capture system, KISTLER force plate and DELSYS wireless surface electromyography. One-way ANOVA was used to compare the kinematics parameters (hip, knee, ankle angle and velocity, COM changes), dynamic parameters (dynamic postural stability index, ground reaction force, joint moment, landing load rate, COP) and muscle activation level (RMS and muscle co-contraction rate) of the lower extremity joints of each group at five landing phase after takeoff.

Results: 1) In the aspect of posture stabilization mechanism, CAI athletes have better posture stabilization ability; hip flexion and abduction strategies provide CAI with better dynamic posture stabilization strategies; in order to reduce the risk of ankle sprain, CAI landed with more ankle valgus movements; highly activated ankle joint muscle contraction is an important mechanism for CAI and LAT to stabilize joints. 2) As for the causes of repeated sprains, the limitation of ankle dorsiflexion affects the reduction of the overall range of motion of the ankle, and the risk of CAI sprains increases significantly; the early and rapid varus speed of the ankle may be the key factor for repeated sprains; the excessive range of varus and valgus of the ankle is the potential risk of CAI sprains; insufficient activation of peroneal longus may be a sequela of CAI and LAT neuromuscular injury. 3) In the aspect of action control strategy, the action strategy of LAT tends to CON, but there is still potential risk of repeated sprain of CAI

Conclusions: Even after sprain recovery, CAI athletes still have the possibility of sprain again. It is possible to strengthen and train the range of ankle movement and neuromuscular control to avoid repeated injury.

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061 | The statistical analysis of research data about magnetic nanomaterials used for cancer targeted therapy based on web of science (WOS) and essential science of indicators (ESI)

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Objectives: The numbers of total papers, Highly Cited Papers, and Hot Papers about Research Front–Magnetic Nanomaterials used for cancer targeted therapy were statistically analyzed using the powerful index and analysis functions of WOS and ESI. The aim of this analysis was to put forward the development trend and research direction of this field in the future.

Methods: ESI was used to search Research Fronts and Top and Highly cited papers, and WOS was used to find relevant literature, Highly Cited Papers and Hot Papers.

Results: In this study, there were 910 literatures related to the magnetic nanomaterials used for cancer targeted therapy, including 46 Highly cited papers, 2 Hot papers and 2 Top papers. After statistically analyzing publication years, organizations-enhanced, research areas, type of literatures, author, publication etc., it was found that the number of papers increased rapidly in the past 10 years, which was related to the increasing trend of global cancer incidence year by year. The number of Highly Cited Papers reached to a high peak in 2017. This indicated the related papers in recent two years have much cited these Highly Cited Papers in 2017, reflecting the timeliness and novelty of these cited papers. Among the top 100 organizations, 39 organizations were from China with a total of 487 papers, accounting for 53.5%. However, among top 10 organizations with 46 Highly Cited Papers, there are 3 organizations from China, with 11 articles, accounting for 24%. There are 6 organizations from USA, with 19 articles, accounting for 41.3%. This showed that China had a strong research foundation in this field, while USA had a higher level of research than China. The research areas focused on materials science, chemistry, science technology.

Based on the statistical analysis of the contents of papers with Highly Cited Papers, Hot Papers and Top Papers, the paper put forward the development trend and research direction of this field, focusing on the following three aspects:

1. Further screening new magnetic nanomaterials such as more actively targeted materials, multi-functional materials ("theranostics") and more complicated materials.
2. Studying on the low toxicity and non-toxicity of magnetic nanomaterials and how to degrade and excrete them in a reasonable time in the body to avoid long-term toxicity.

3. Researching on targeted therapy and combination therapy for cancer.

Conclusions: The application of magnetic nanomedicines in cancer targeting therapy is an important direction of clinical research in the future.

062 | A study on multi-imaging system for mouse thrombosis monitoring

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Objectives: We configured the device with the research on molecular imaging systems for monitoring mouse carotid artery thrombus imaging using fluorescence and photoacoustic system. Fluorescence imaging was performed using a phantom experiment in order to detect the exact location, and Photoacoustic image was conducted in order to detect the depth.

Methods: Fluorescence and photoacoustic image experiments were tested using a contrast agent consisting of various concentrations. The intensity of the fluorescent light according to the concentration of the contrast medium was performed prior to experiment to find the optimal density for the experiment because of the different contrast agents. Levels were experiments produced a sample at a concentration of 2500, 250, 25, 2.5, 0.25 µg/ml, respectively.

Multi-modality image experiment was tested using phantom. Phantom to the horizontal, vertical and a height of 73*50*21 mm was prepared by inserting a tube of 25 mg/mL indocyanine green into a gelatin.

The carotid artery model experiment was performed to obtain a fluorescence image by incising the Carotid Artery near the skin and muscle. When obtaining a fluorescence image, the 25 µg/mL contrast medium was injected.

Results: A concentration of 25 µg/mL in the experiment shows that the fluorescent image and PAT image are clearly visible. The obtained fluorescence image and PAT image showed the feasibility of the system. And fluorescence image and photo-acoustic image could be obtained in the same position. Photoacoustic tomography imaging was used to supplement depth information, which is disadvantage of fluorescence imaging system. In animal experiments, fluorescence images in carotid blood clots showed the potential for drug-transfer imaging.

Conclusions: Fluorescence images and PAT images of same concentration contrast agents placed were obtained by the developed imaging system.

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063 | The healthy green tourism path

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Objectives: This article aims to explore the new path of smart healthcare in the green tourism environment from the perspective of the integration of ecological and physical and mental health, because the beautiful environment and the physical-mental health is closely related to the green tourism approach. It has penetrated into all aspects of human life.

Methods: First, determine the healthy-beautiful ecological environment (it needs to be carefully maintained by people). Furthermore, those who clearly maintain a beautiful environment must be physically and mentally healthy (as a psychiatrist of mental health). Finally, the new concept of emphasizing the green tourism is to highlight the healthy concept of a harmonious development between man and nature. If the environment on which humans depend for survival is seriously polluted, it will inevitably cause harm to people in terms of basics, pharmacology and toxicology, such as smog pollution to the air, biochemical toxins for drinking water sources and soils, and crops pollution and so on. Therefore, the healthy green tourism approach can drive people in all aspects to pay attention to the protection of the environment and the care of human psychosocial health, thus contributing to human health.

Results: a unique entry point for the smart healthcare, the healthy green tourism path the research approach that is highlighted. Its characteristics are: the environment cares for people; people care for the environment; nature and people live in harmony. How can we achieve this harmony? This problem is too big to solve. Therefore, through the healthy green tourism approach, the development of smart medical care becomes the smart lifestyle that combines the smart prevention and environmental protection, and is no longer limited to the medical care.

Conclusions: The significance is to discover the truth, not only physical and mental health is really healthy, but also, only when nature and people live in harmony, will be used for the real healthy environment. Therefore, in the end, the human health problem has evolved into the question

of whether the ecological environment is complete and beautiful. Furthermore, it has returned to the question of whether people's psychology is really healthy and whether the behavior is really reasonable. That is why this interdisciplinary project is called a healthy green tourism route. Next, we will conduct in-depth research from the aspects of teacher screening, curriculum setting and subject knowledge center construction, and combine theory with practice to promote the popularization of this new concept of healthy green tourism.

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064 | Extending the TAM to explore the behavior of user in using the innovative game console

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Objectives: Science has been proof that playing video games can reduce stress. Switch is a game console developed by Nintendo in 2017, the well-designed of Switch makes it become one of the most innovative game consoles, it flipped the traditional video games market and brings new trends, and thus it's necessary to find out the behavior of Switch users. TAM (Technology Acceptance Model) was the most widely recognized model to explain or predict the user's acceptance in information technology. But the development of product technology ever-changing, therefore, by using the PU (Perceived Usefulness) and PEOU (Perceived Ease-Of-Use) of TAM Theory to explore the acceptance in information technology is insufficient. This study takes TAM as a foundation include the "Compatibility" of Innovation Diffusion Theory and the "PP (Perceived Playfulness)" of Flow Theory to constructing an extended TAM to examine the factors that influence the acceptance of Switch users'.

Methods: This study used the snowball sampling method to distribute surveys, a total of 306 survey data were collected from undergraduate students in Taiwan. Data obtained were analyzed by descriptive statistics, CFA (Confirmatory Factor Analysis) and SEM (Structural Equation Modeling). (Sig. level $\alpha = 0.05$)

Results: 1. The overall behavior model of Switch users had well fitted (RMSEA = 0.029; GFI = 0.948; AGFI = 0.931) and well explanatory (R^2 of attitude = 0.82; R^2 of behavioral intention = 0.73). 2. Perceived playfulness had the highest significant positive effect on attitude (Standard $\beta = 0.701$, $t = 8.395$, $P > 0.05$), followed by Compatibility (Standard $\beta = 0.216$, $t = 3.675$, $P > 0.05$).

Conclusions: 1. The Extended TAM proposed in this study could well explain the behavior of Switch user by including the variable of compatibility and perceived playfulness. 2. It is recommended that in future, beside design innovative games, the manufacturers not only need to attention in usefulness and ease of use, the feeling of user pleasure and usage habits should be strengthened to enhance the use intention of the game console.

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065 | Design and implementation of farmer monitoring IoT middleware for crop cultivation

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Objectives: Sensor technology for precision agriculture can be used to collect data on the growing environment of crops and their crops to achieve farmer productivity and efficiency goals. Conventional solutions assume the use of the latest expensive sensors and are therefore difficult to apply to farms that use older equipment. Farmers who operate farms must have information about every step of the crop production process to better manage their business. Modern agriculture is based on agricultural production models that can predict crop yields and costs based on worker activity data.

Methods: The system proposed and implemented in this paper aims to monitor farmers who grow special crops using existing hardware. Experiments have shown that GPS module in general smartphone is used in rural farm environment and we have developed new location monitoring technology considering this problem. The proposed method uses sensors such as GPS, accelerometer, magnetometer, and gyroscope built in the latest smartphone. Data from agricultural workers are obtained using inertial sensors instead of sensors in the field or sensors in existing expensive agricultural equipment. The result is to collect the identified worker performance indicators of the working days used as inputs to the agricultural production model.

Results: Within 30 minutes, the model can manually classify multiple data points sufficient to accurately classify agricultural activities in more than 90% of the time using data from the same operator or using data from another operator. From

the experimental results, it is difficult to distinguish between walking forward and backward walking. This is even more noticeable when the classification model uses data from other people due to different gait patterns. However, these two activities are not problematic because they can be classified as walking only, without affecting the goal of separating the agricultural activities carried out by agricultural workers. When the classification model uses data from other workers, the fraction of correctly classified activities is slightly reduced, with an average value of 80% to 90%.

Conclusions: Recently, in the field of precision agriculture, human workers are focusing on the productivity of crops rather than confirming that small amounts of research are being done but correct activities are being done. We need to study other areas where human activity monitoring has already been tested and some technologies are available. Our solution allows farmers of all sizes of specialty crop farms to monitor agricultural processes using a smartphone installed next to the waist support of the waistband operator.

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066 | Evaluating the cross-border E-commerce system model between AIoT and 5G

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Objectives: Cross-border e-commerce has changed the traditional trading model, moving consumers from offline transactions to online transactions and from domestic transactions to international transactions. With the rapid development of technology and the Internet, the increase of the global e-commerce industry has also led to the continuous increase of cross-border e-commerce platforms, such as Amazon and Alibaba. When consumers search for products through cross-border e-commerce platforms, the products are diversified. It often takes a lot of time to select a product. In the process of searching for products, sometimes you may not choose the satisfied products. However, in the cross-border e-commerce transactions, how to effectively improve the chances of customers using the platform? Therefore, this study hopes to construct a selection model that will enable consumers to save time and effort when purchasing goods in a cross-border e-commerce platform. At the same time, improve the use efficiency of the platform and increase customer loyalty. This study can provide a reference for the manager of the platform.

Methods: This study mainly uses deep learning method and cloud computing method. Firstly, through the consumption history data of users of cross-border e-commerce platform, it constantly learns and simulates the usage habits and preferences of consumers. Introducing the technology of AIoT, the system can be more intelligent, the user's needs can be correctly exported, and the speed of 5G can be used to quickly and zero-delay, and the suitable store and products can be recommended for users to choose.

Results: The cross-border e-commerce platform introduces the AIoT technology, and through the intelligent service, it can effectively recommend the store and products suitable for consumers, and give consumers reference when purchasing goods, and improve the satisfaction of consumers. Through the ultra-high-speed, zero-delay network speed of 5G, the time for consumers to search for goods can be effectively shortened, and the system can instantly know the needs of customers and provide immediate feedback. At the same time, it also increased orders for cross-border e-commerce platforms, driving the loyalty between the platform and customers.

Conclusions: After research and analysis, intelligent services and network speed are the places where cross-border e-commerce platforms need to be strengthened in addition to logistics. The results of this study can provide a reference for the platform administrators.

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067 | Exploring key factors of improving SPD operational efficiency

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Objectives: Traditionally, the medical supply chain is conservative and is no longer sufficient to meet the healthcare needs of high-speed social development. To provide better medical quality, it is necessary to let the hospitals run the supply, processing and distribution (SPD). This research is mainly to explore the key factors of affecting the SPD operational efficiency as a basis for improving logistics operations in hospitals.

Methods: This study takes Shanghai Pharmaceutical Circulation as the research object. Fuzzy decision-making trial and evaluation laboratory (F-DEMATEL) is employed to delete the fuzzy factors existed in human decision-making process.

The experimental period is from June 2018 to December 2019. Firstly, through the literature review and expert interviews, a hierarchical structure consisting of three aspects and fourteen factors was constructed. Secondly, an expert questionnaire was conducted to acquire the assessments of the influence between every two factors. After the data passed the consistency check, the average values were processed by the algorithm of F-DEMATEL. Finally, the causal map was plotted.

Results: Referring to the causal map, among the fourteen factors, it is obvious that "Integrating the operations of the pharmaceutical supply chain" and "Improving operation ability of hospital information system (HIS)" are the top two in terms of total influence value and net influence value. Therefore, they can be regarded as crucial factors.

Conclusions: This study explores that "Integrating the operations of the pharmaceutical supply chain" and "Improving operation ability of HIS" are the most effective strategies when hospitals intend to improve SPD operational efficiency. It also means that launching SPD and exploring the social service model for the pharmaceutical companies can provide timely medical supplies and medicines to the places needed to reduce the amount of business at the clinic, so that medical supplies can be managed flexibly. Furthermore, hospitals can import the technology of artificial intelligence + Internet of things (AIoT) to connect the HIS with the pharmaceutical business enterprise resources planning (ERP) to help the logistics operators optimize the in-hospital distribution, which can effectively reduce operating costs and improve management efficiency.

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068 | A study on sulphur-containing particles in atmospheric PM10 of typical mining cities

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Objectives: Reducing the emissions of SO_2 and sulfur-containing particulate matter is of great significance for controlling of air quality. Aerosols from the oxidation of coal-fired SO_2 are an important reason for the serious pollution of inhalable particulate matter in most cities in China. Especially in mining cities with large amount of coal-fired, where low atmospheric visibility has become almost the marker of air pollution, which caused by the scattering and absorption of sunlight by the large number of sulfate aerosol particles floating in the atmosphere. In addition to causing acid rain and deterioration of visibility, Sulfate particles can cause human health damage. Community epidemiological studies and other studies also showed that there is a significant correlation between contamination of sulfate particles and mortality.

Methods: A single particle analysis technique is used to study the content of sulfur-containing particles in the atmospheric PM10 of Pingdingshan city in Henan province, a typical coal mine city. Two sampling points were selected in the Center of Pingdingshan city and mining area, respectively, and 22 days were sampled continuously, elements were analyzed by ICP-MS, and the main particle types in aerosols were identified by SEM/EDX.

Results: Morphological characteristics of sulfur-containing particulate matters show that the most common regular-shaped mineral particles were rod minerals, which appeared in both urban and mining samples, especially in samples collected from haze weather. In addition, it is found that the surface of some minerals is dissolved, which may be due to moisture solution effects on the surface of some minerals. The sulfur-containing particles in aerosols of Pingdingshan city are mainly in forms of Ca-K-S and Ca-S particles. The second form is K_2SO_4, $(NH_4)_2SO_4$ and soil dust + $(NH_4)_2SO_4$ particles.

Conclusions: Sulfur-containing particles are an important feature of air pollution in Pingdingshan city. The main types of sulfur-containing particles were soil particles and $CaSO_4$, while in the PM_{10} samples collected from the surrounding mining areas, the main types were of Ca-K-S and Ca-S. Sulfur enrichment occurs in PM_{10} samples in urban areas, which is related to the contribution of coal-fired emissions SO_2. In addition, the content of quartz particles, Ca-rich particles, high-Si and high-Al particles is very high, both in urban and mining areas. In these Sulfur-containing particles, the high detection rate of Fe and K indicates that the influence from mining dust is very large. Ca-S particles should be $CaSO_4$. Ca-K-S particles are composite sulfates, and there is an intrinsic relationship and correspondence between Ca-S and K-S particles. The formation of a significant number of Ca-K-S particles and other sulfate particles is associated with meteorological conditions and may be the product of processes in the haze.

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069 | Progress and prospect on virtual brush modeling

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Background: As the head of the scholar's four jewels, the brush has occupied an irreplaceable position in the traditional

culture of Chinese painting and calligraphy since its invention. Calligraphers and painters usually would like to express their thoughts and feelings with the help of the expressive power of brushes. After entering the digital era, people hope to integrate the characteristics of the brush with modern science and technology, simulate the function of brush truly, and promote the creation of calligraphy and painting art. In order to simulate the art creation of calligraphy and painting naturally and vividly with the help of modern computer technology, scholars at home and abroad have done a lot of work around the research of virtual brush model. They used different modeling methods to construct virtual brush models with their own characteristics. Although some achievements have been made in this respect, there are still some gaps compared with the ideal goal. Therefore, it is necessary to analyze the research status and modeling methods of virtual brush in order to promote its further development.

Methods: By reviewing the research status of virtual brush modeling, this paper summarizes the basic principle, merits and drawback for typical modeling methods, and discusses the simulation results based on empirical-based methods and physical-based methods, respectively. The influence of brush-paper interaction, paper-ink interaction and human-computer interaction devices on virtual brush modeling is also briefly analyzed. Finally, the main difficulties and problems in virtual painting are analyzed, and the prospect of research of virtual brush modeling in the future is pointed out.

Results: The empirical-based brush modeling is to utilize the change of the contact part between the brush and the paper surface to simulate the brush painting effect on the basis of summing up the practical experience of calligraphy and painting creation and a lot of experimental experience. It has the advantages of simple calculation and good real-time performance. However, this model does not take into account the characteristics of the actual brush such as the fickleness of brushwork. The physical simulation-based brush modeling utilized considering the physical factors such as the shape of the brush head, the elasticity and deformation of the brush hair to construct the physical model of brush. And then on the basis above, utilizing the physical laws or rules control the dynamic change of the brush. It not only makes the creative process more realistic and intuitive, but also makes the simulation effect that rivalled with the real effect.

Conclusion: The computer simulation of Chinese painting and calligraphy has achieved certain research progress at present; however, there are still some problems on brush modeling, construction of ink diffusion model, and the formation mechanism of Chinese painting and calligraphy. In the future, multi-subjects crossed research of computer graphics rendering technology, artificial intelligence technology and MEMS technology should be considered comprehensively to further promote the development of computer simulation of Chinese calligraphy and painting.

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070 | Knowledge-based discrete probability approach on gene regulatory network

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Abstract: Information extraction from gene regulatory network is still a challenging task for the researchers. Many mathematical approaches have analytically failed in identifying and correlating positive interactions, negative interactions and epistatic interactions of the links of the disease constructed as a network. Markov model which is a stochastic model can be used to find out the interactions among genes to control a cell function by constructing maximum degree-based program dependence graph. The proposed Degree Based Gene Regulatory Program Dependence Graph Algorithm (DBGRPDGA) is analyzed through modified markovian model which includes conditional total probability of the present links of the states in program dependence graph of the corresponding gene regulatory network disease model. Different types of gene regulatory network like connected regular, connected irregular disease chart was analyzed based on the degree-based theoretical system through Markovian model to investigate the positive interaction and negative interactions between genes to yield best outcome-based product for the patient treatment. The proposed DBGRPDGA system will provide the approach for the treatment of the particular patient's disease framed as the disease network to yield positiveness and negativeness of the treatment to be continued for getting soon unbiased relief from the disease.

Degree Based Gene Regulatory Program Dependence Graph Algorithm (DBGRPDGA):

Step 1: Consider a Gene regulatory network, G.

Step 2: Construct program dependence graph for G by choosing any node REFERRED AS DIE with maximum degree.

Step 3: Fix the source node and sink node and designate levels available in program dependence graph from level 0 to level L with respect to maximum degree.

Step 4: Calculate the in degree, out degree, adjacent degree of all the nodes of G in all the levels as follows:

(a) In degree of a node = Number of links from the previous level and adjacent level to the current level.

(b) Out degree of a node = Number of links from the current level to the next consequent Level.

(c) Adjacent degree of a node = Number of links from the node to other nodes in the same level.

(d) Level 0: In degree = 0

(e) Level L: Out degree = 0

Step 5: Calculate conditional probability distributions for all the nodes of G.

Step 6: Identify positive, negative and epistatic interaction.

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071 | Design of engine diagnostic expert system based on a military vehicle

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Objectives: In the engine fault diagnosis expert system, the commonly used fault tree analysis method has the gap between the fault phenomenon-based and cause-based judging process. The inference strategies used forward reasoning while ignoring backward reasoning. Heuristic information gathering is difficult and could lead the blind search. The military engine fault diagnosis expert systems usually ignore the more critical battle damage repair mode. Therefore, it is necessary to further study the military vehicle engine fault diagnosis system.

Methods: The fault tree is expressed in frame representation and production notation, and an expert system knowledge base is established. The hybrid reasoning method is used to realize the forward reasoning and reverse verification of fault diagnosis. The logic reasoning expert system with parameter algorithm as heuristic information is established. The depth-first heuristic search is adopted with fault tree depth. Fault trees are established according to different types of events: for the single-level, the expert experience method is used to establish the membership degree and fuzzy relation matrix between the fault phenomenon and the fault cause. For the multi-level, the data association between the engine operating parameters and the fault causes and fault parameters is first proposed, and the inference engine design is implemented according to the input parameters using Mamdani fuzzy inference method combined with logical reasoning. In response to the actual situation of battlefield repair, the life tree analysis method is also established.

Results: Expert system knowledge base covers nine fault trees. Two inference engines are designed: single-stage phenomena and multi-level phenomena fault tree. In the arguments within their respective scope of application, more than 95% of the correct reasoning results are achieved. The established war damage repair theory and the theory-based specific analysis method have achieved 90% accuracy through the verification of actual cases. The system could help visually observe the influence of each component in the engine life system, and clearly guide the direction and method of war damage repair.

Conclusions: Based on the analysis of engine failure of a certain military vehicle, a logic reasoning expert system with the parametric algorithm as heuristic information is established. The single-level phenomenon and multi-level phenomenon fault tree inference engine are covered for different application conditions. The system is verified by examples and could obtain good reasoning results. The further proposed battleground repair theory and its analysis method have strong practical performance, which would greatly improve the judgment and maintenance efficiency of military vehicles.

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072 | Explore the development of mobile business from AIoT and 5G

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Objectives: The rapid development of intelligent technology, combined with the application of smartphones, gradually changes the consumer's consumption pattern. The development of e-commerce is no longer limited to computer transactions and traditional store transactions, to a more convenient mobile business. In the development of 3G and 4G, the maturity of third-party payment platforms, consumers have gradually become accustomed to using smart devices to carry out online and offline consumption models. However, the ultra-high speed, low latency from 5G, it will bring another consumption type to mobile business. Service-oriented mobile commerce will transform into an intelligent,

customized mobile business model. Therefore, this study wants to explore what kind of changes will be brought to businesses and consumers in combination with mobile business under AIoT and 5G applications.

Methods: This study uses a take-out program to conduct research. On the enterprise side, the take-out program combines the application of smart maps (e.g. Baidu Map, Google Map), using AIoT and 5G technologies, through smart wearable devices (e.g. smartwatches). The projection technology instantly projects the appearance of the customer's home when the customer places an order. Intelligently identify the best path from the store to the customer's home, so that the delivery staff can determine the delivery location and reduce the mistakes in the wrong place, to improve the delivery performance of the store.

On the client side, when the consumer uses the take-out program, the system uses the technology of AIoT and 5G, combined with the historical consumption pattern of the consumer, the system intelligently calculates and recommends to the consumer, from the location of the consumer, the shortest distance, and the consumer. The best store for the products, for consumers' reference.

Results: Mobile business introduces AIoT technology, which can effectively recommend stores and products suitable for consumers and refer to consumers when purchasing products. Through 5G's ultra-high-speed, low-latency network speed, the system can instantly respond to demand. At the same time, the service-oriented mobile business is transformed into a smart service and a customized mobile business model.

Conclusions: Mobile business combined with AIoT and 5G applications will bring more convenience to enterprises and consumers. The system's intelligent service, immediate feedback, will enhance the relationship between the enterprise and its customers.

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073 | A SOM-based method of monitoring public opinion for food and drug safety network

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Objectives: In recent years, the issue of food and drug safety has become a hot social issue. The frequent food and drug safety issues have not only caused huge losses to the social economy, but also raised concerns about food and drug safety, making food and drug safety topics spread faster. And triggered a lot of network public opinion. As the world has entered the era of big data, data are becoming more diversified and complicated, and network public opinion monitoring should be comprehensively analyzed from a diversified perspective. The timeliness of topic detection is also becoming higher. The explosion of data volume leads to the traditional framework. It is no longer possible to do real-time processing, and research on public opinion monitoring of food and drug safety networks is imminent.

Methods: This paper mainly studies the basic idea, network architecture, algorithm flow and limitations of applying SOM neural network model to network public opinion monitoring. Comprehensive news data and microblog data track food and drug safety. Firstly, SOM neural network is used to realize classification and clustering of network public opinion information. For the characteristics of text data in food and drug safety field, the detection algorithm based on SOM neural network is improved. Each output neuron adds a threshold to establish a food and drug category decision tree. Then, the text data are classified and then clustered, which further improves the timeliness of topic detection and effectively improves the timeliness of the system. Finally, the real data experiments verify the effectiveness of the improved algorithm, improve the accuracy and rapidity of network public opinion monitoring, and provide a useful solution for network public opinion monitoring modeling.

Results: The improved SOM neural network-based food and drug safety network public opinion monitoring model has obvious advantages, and the advantages are gradually obvious with the increase of data. Experiments show that the improved SOM neural network is used to detect and classify the characteristics of food and drug safety topics, and to find out the topic hot words. The accuracy of topic detection is obviously improved compared with the classic Single-Pass algorithm, and the missed detection rate is reduced. The experiment focused on the emergence and development of food and drug safety incidents and verified that the participation and the degree of the topic of network public opinion monitoring are related to Baidu search. The topic heat value and warning value indicate the effectiveness of the network public opinion monitoring model.

Conclusions: This paper combines the characteristics of food and drug safety issues, conducts topic detection from multiple types of data sources, and achieves early warning of hot food and drug safety topics. The establishment of the public opinion monitoring model based on SOM neural network for food and drug safety network is of great significance to social and economic stability and people's healthy life, and provides a good theoretical basis for the establishment of a scientific and comprehensive food and drug safety network public opinion monitoring system.

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074 | The target detection based on YOLOv3 and PVSGAN

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Objectives: The performance of object detection has advanced with the development of deep learning, however, considerable improvement is still required for the moving target detection, such as pedestrian and vehicle detection. The task becomes more complex considering the different scales and the small pixel itself of objects, so there is still a lack of studies on what can improve object detection based on deep learning. This paper proposed some strategies to detect road moving targets, including pedestrians and vehicles, based on YOLOv3 and PVSGAN.

Methods: We adopted the YOLOv3 algorithm for vehicle and pedestrian detection. To improve the performance of the detector in this process, it is necessary to design and optimize the algorithm according to the characteristics of vehicles and pedestrians. Firstly, the anchors in YOLOv3 are designed by using the algorithm of k-means, which makes the YOLOv3 detector to locate of positives objects better in the training process. It would also play a significant role in detecting different scales. Secondly, the backbone network Darknet53 in the YOLOv3 was firstly trained on the ImageNet, and then, the pre-trained weight is utilized to initialize the YOLOv3 model, which improves the convergence speed and accuracy of the model. Thirdly, we propose a novel GAN network architecture namely pedestrian and vehicle synthesis GAN (PVSGAN), which could generate diverse pedestrian and vehicle data to improve the performance and robustness of the detector. Experimental results demonstrate that the proposed methods can improve the performance of pedestrian and vehicle detection to some extent.

Results: The performance of the model is tested with the confidence of 0.75. The bench pedestrian and vehicle mark AP are 59.72%, 84.28% respectively, which was trained from scratch by YOLOv3; the AP achieved to 63.46%, 85.75% respectively when the anchors were modified by k-means. The AP achieved to 63.46%, 88.25% respectively when the pre-trained weights applied. Finally, we use PVSGAN to generate pedestrian and vehicle as a method of data augmentation. The AP comes to 65.72%, 90.78% respectively.

Conclusions: The experiment result shows that our proposed methods could improve the performance of the YOLOv3 detector, which could also be common tricks for other similar detection task. Our experience with different approaches that aim to improve detector performance shows good promise on this task.

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075 | Hearing-loss profile of ground handling workers in juanda airport surabaya

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Background: The World Health Organization (WHO) reports that there are 466 million people in the world who are currently suffering from hearing loss. Hearing loss can be caused by many factors, including genetic factors, degenerative factors, infectious diseases, trauma, consumption of drugs that can affect the sense of hearing, and noise. One of the work environment that can cause noise is at the airport. At the airport, we can find noise that is quite loud, especially in the ground handling section. This noise comes from the sound of the aircraft engine. If workers in the ground handling section are exposed to noise continuously, then it is possible that the worker will experience hearing loss.

Methods: This type of research is descriptive with cross-sectional design. The research was conducted from April 2018 to November 2018 at Juanda Airport Surabaya. The samples in this study were workers of Jasa Angkasa Semesta Ltd., chosen using a simple random sampling technique. The subjects who fulfilled the criteria were 89 people from 160 workers, i.e. working minimum of 2 years and the age between 20 and 60 years. The research data were obtained from audiometric examinations and the answers of the questionnaire related to the research from the subjects.

Results: The normal hearing are found in workers with the age range 40-49 years (16.85%), whereas in the age range 50-60 years more workers have bilateral type hearing

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loss (13.48%). Among male workers, 40.45% have normal hearing, 16.86% unilateral type, 29.21% bilateral type. While in the female workers, 6.74% have normal hearing, 3.37% have both unilateral and bilateral type. The hearing loss mostly happened on workers in the ramp silver section (±83.7 dB) with unilateral and bilateral type of loss, successively 4.49% and 6.74%. The normal hearing is mostly found in workers with working period of 2-6 years (16.86%); meanwhile, the most number of unilateral type is 7-11 years (5.62%), and bilateral type is 17-21 years (11.24%). Workers using ear protectors mostly have normal hearing (25.84%), while workers without ear protectors mostly have unilateral type hearing loss (14.61%). In the bilateral type of hearing loss, there is no significant difference between the workers using and not using ear protectors.

Conclusion: The workers who mostly get hearing loss are at the age of 40-49 years; in the ramp silver section; working period of 17-21 years; and rarely used ear protectors. We recommend that prevention programme is held.

076 | Reduction of trip operating time of electronic type ELCB for protection of human body against electric shock

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Objectives: ELCB (Earth leakage circuit-breaker) is a circuit breaker used in a low-voltage AC electrical circuit to provide electric shock protection and to prevent fires from current leakages. Trip operating time of ELCB depends on the magnitude of leakage current and the duration time of leakage accident. As a result of measurement and analysis of the circuit and electric signal after ZCT(Zero-sequence current transformer) output terminal of existing ELCBs, electronic trip type ELCBs in present market have shown up to 27 ms of self-trip operating time under 30 mA of leakage current. This 27 ms of time delay is due to the problem that the IC in existing electronic circuit detects only the reverse-half cycle of sinusoidal leakage current. Faster trip operation of ELCB is important for preventing property loss by fire and electric shock to human body from current leakages accidents. In this paper, the authors design a new electronic circuit that minimizes the delay factors of existing ELCB circuits.

Methods: Trip operating time of ELCB depends on the magnitude of leakage current and the duration time of
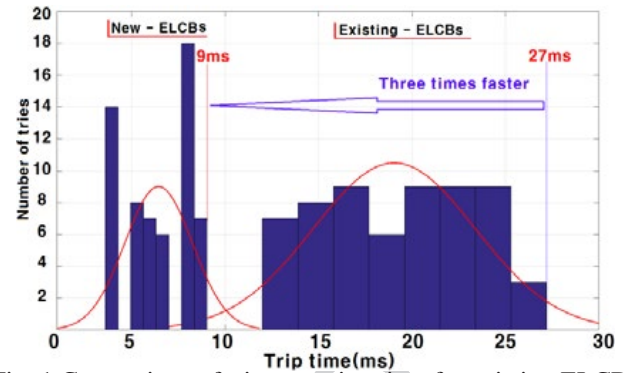

Fig. 1 Comparison of trip operation time for existing ELCBs and new ELCBs

leakage accident. The ICs in existing electronic type ELCB of present market are operated only within the reverse half cycle of sinusoidal leakage current. For fundamental reduction of trip operating time of ELCB, however, it is essential for the ICs to be able to detect the full-wave input signal. Faster trip operation of ELCB proposed in this paper will contribute to preventing property loss by fire and electric shock to human body from current leakages accidents.

Results: The authors in this paper developed an electronic circuit in which the delay factors are optimized and by which the full-wave leakage signal is measurable to obtain minimum trip operating time of an ELCB. As the result of experiment, the longest trip operating time of existing ELCBs was 27 ms under 30 mA of rated sensitivity current while the longest trip operating time of newly developed ELCB has shown 9 ms, which implies trip operating time of ELCB can be improved almost three times faster. Shortened trip operating time implies reduction of shock duration of leakage current. Needless to say, the faster the trip operating time of ELCB, the less the electrical damage to human body.

Conclusions: Since the electric shock to human body and the outbreak possibility of fire are inversely proportional to square root of shock duration, faster trip operation of ELCB proposed in this paper will contribute to providing shock protection to human body and to preventing fires from current leakage accidents. In particular, it would significantly improve the electric safety in wet areas such as a swimming pool, medical institutions and welfare facilities for children and the aged.

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077 | A **linked data exploration system for lay users**

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Backgrounds: Linked Data (a.k.a. Semantic Web or Web 3.0) is the next generation Web for machine readability. Even though lost of data exist in the Linked Open Data, accessing raw data is very hard for users without technical backgrounds on the Semantic Web. Currently, a standard way to access them is using SPARQL which is a sophisticated query language based on strict grammar rules. This paper proposes a system called CCDE (Collection Centered Data Exploration system) by which non-expert users can access various kinds of raw data in the Linked Open Data. The proposed system hides details of SPARQL queries and shows data in web page formats. Each page represents a collection of raw data that satisfy certain constraints specified in computer-generated SPARQL queries. Here, users can simply click hyperlinks to access the desired information.

Methods: CCDE creates virtual documents that represent a collection of facts satisfied certain data patterns. This means that every document in the system comes from a result of SPARQL query. Virtual documents also have links to others according to published predicates. These links are not individual links in Web of Data. Instead, they are hyperlinks that represent group-to-group relationships. For instance, a hyperlink may exist between a list of TV Shows and a list of Actors that stands for 'starred_in' predicate in an RDF triple that consists of (subject, predicate, object). With virtual links generated by the proposed system, lay users can navigate pages that correspond to the results of SPARQL queries. Each page of the system is generated by software in order to represent a collection of raw data which satisfy certain SPARQL conditions. Currently, the system shows data in the DBpedia (https://dbpedia.org) that is one of largest Linked Open Data.

Results: Users can access data by simply visiting http://linked.korea.ac.kr that shows an index page for all data categories of DBpedia. They can easily surf pages by following hyperlinks. Because each page represents results of certain SPARQL queries, it is equivalent to executing SPARQL queries in sequence. It is possible that a user can mark some web page so that the corresponding date can be re-used. For example, it is possible to merge all marked data and export it as an HTML table.

Conclusions: CCDE provides an easy way to access Web of Data without technical knowledge on SPARQL. It supports an intuitive interface in which users can start surfing in order to find the desired information. The amount of data in the form of Linked Open Data (https://lod-cloud.net) is constantly increasing and it is expected that CCDE will help expanding the user base of Linked Open Data.

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078 | **Dynamic sub-swarm PSO for large scale multi-objective optimization**

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Objectives: Most of the decision-making problems in social life need to consider different constraints and deal with the conflict of multi-objective at the same time. How to deal with these conflicts and provide people with effective alternatives is a multi-objective optimization problem. Up to now, multi-objective optimization has attracted wide attention and gradually developed into an important subject. However, with the increasing development of big data and the emergence of scientific research and engineering practice, the complexity and scale of multi-objective optimization problems in practical applications have been increasing, and they are constantly challenged. Therefore, the study of multi-objective optimization is a subject of practical significance and scientific value. However, there is a great difference between the multi-objective optimization problem and the single-objective optimization problem. It is not a single problem to solve the maximum value, but a conflict and coordination among the objectives. There is no single solution for all the objectives. The optimal solution is a set of solutions. The convergence of the solution set to the Pareto frontier and the distribution of the solutions are the criteria for evaluating the quality of the solution set. This makes it more difficult to solve multi-objective optimization problems. Particle swarm optimization (PSO) is widely used in the practical engineering field of multi-objective optimization because of its good communication and high searchability. But most of the traditional multi-objective particle swarm optimization (MPSO) algorithms have excellent performance on small scale optimization problems, but there are some problems in solving large scale multi-objective optimization problems, such as slow speed of solution and deterioration of solution quality. Because of its limitations, the proposed algorithm has important research significance for solving large scale multi-objective optimization problems.

Methods: Dynamic distributed strategy and Multi-swarm co-operative evolution mechanism are introduced. And from the perspective of cloud computing technology, combine with parallel computing technology in cloud computing. Parallel

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computing technology divides tasks into several sub-tasks and assigns them to each host in the host cluster. This paper is based on the efficient population cooperation mechanism which decomposes the problem into sub-problems with second-order structure. It decomposes large-scale multi-objective problems into several sub-problems and assigns them to several dynamically adjusted sub-population sizes. Through the distributed solution strategy, several sub-populations are solved in parallel, and the solving speed of the algorithm is improved, so that the algorithm can find a solution set of multi-objective problems faster, and the solution can approach the Pareto frontier as much as possible in the target space. While all sub-populations search in parallel, a reasonable sub-population cooperative evolution mechanism is designed to make the optimal individuals searched by the algorithm migrate among different sub-populations, which can be used as periodic shared information to guide the evolution process, so as to improve the quality of disaggregation. Finally, the algorithm is designed in detail according to the theoretical analysis, and the test data of multi-objective optimization function are discussed.

Results: The proposed method is test on many random datasets and several UCM datasets. The experimental results demonstrate The large scale multi-objective optimization algorithm based on dynamic distributed strategy can improve the efficiency of the algorithm, balance the global searchability and local searchability of particles, make the correct rate of non-inferior solutions obtained by particle search higher, and better approximate the real Pareto frontier. At the same time, the diversity of particles ensures the uniformity of particle Pareto frontier. The Multi-swarm cooperative evolution mechanism accelerates the convergence speed and improves the quality of the knowledge set by sharing the global optimum. Comparing with multi-objective optimization test functions shows that the strategy proposed in this paper has better optimization effect and solving ability in large scale multi-objective optimization problems.

Conclusions: Designing effective algorithms for solving multi-objective optimization problems is a hotspot in the field of evolutionary computation. The method proposed in this paper for solving large scale multi-objective optimization problems can further improve the search speed of the algorithm and the searchability of the solution set. It is an important method for solving large-scale multi-objective particle swarm optimization with high performance. However, there are many complex multi-objective optimization problems in practical application. Therefore, this paper studies the large scale multi-objective optimization problem in depth, and designs an effective algorithm for the large scale multi-objective optimization problem, which lays the foundation for solving practical application problems.

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079 | The predictive model of engagement behaviors stimulated by perceived interactivity within the social media environment

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Background: Social media enable users to share, and communicate, collaborate to encourage active and passive user engagement (Burgess & Green, 2013). Its great capability has gained increasing popularity fueled by the demands of Animation, Comics, Games (ACG) enthusiasts to distribute and collect information and share creative content. These platforms include DeviantArt, as well as Japanese sites that offer multi-language interfaces, such as Pixiv, have become the key global networks for amateur artists and their fans, engaged users through the technical aspects of its original design/function (Watabe & Abe, 2016; Salah, 2010). As a participatory online artistic space, relatively new phenomenon, however, little research has been done to identify the determinants of engagement behaviors within the ACG social media.

Objectives: This study aims to identify the antecedents of engagement behaviors by proposing a research model based on the S–O–R paradigm. Perceived interactivity was adopted as a stimulant that together affect people's internal states (O), which in turn drive their behavioral responses (R) to explore how it affects user levels of engagement behaviors.

Methods: The study proposed 9 hypotheses of a research model from literatures reviewed. To ensure content validity, the scales from prior research were used to measure the constructs. Human-to-human interaction, human-to-information interaction, which are sub-dimensions of perceived interactivity, were measured using items suggested by Ling & Chang (2018). Social support, informational support, emotional support, was measured using scales by Zhang, Lu, Gupta, Zhao (2014), while affective engagement behavior scale was measured using 8 items developed within this study and based on Jaakkola and Alexander's (2014), Roy, Balaji, Soutar, Lassar and Roy (2018) earlier research, which had identified the three customer engagement behavior types (i.e. co-developing, augmenting, and influencing behaviors). 347 questionnaire respondents recruited from the ACG majored related university students of north Taiwan who have experience within the ACG

social platforms. A structural equation modeling (SEM) approach was adopted in data analysis.

Results: A model is considered to have good model-data fit. The values for χ^2/d.f. = 2.828 (χ^2 = 890.690; d.f. = 315), GFI (0.856 > 0.8), AGFI (0.827 > 0.8), and CFI (0.865 > 0.8), RMSEA (0.070 < 0.08), P = 0.000, all accepted. Nine hypotheses measured were supportive (H1a, H2, **$P < 0.01$, others ***$P < 0.001$).

Conclusions: The results indicate that ACG social media engagement behaviors are determined by social support, informational support and emotional support experiences. These experiences, in turn, are influenced by perceived interactivity features. There exists an inseparable relationship among the perceived interactivity, user experience and engagement behaviors within the ACG social media.

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080 | Study on tuning method of wireless power transfer system based on phase-controlled capacitor circuit

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Objectives: Magnetically coupled resonant wireless power transfer (WPT) is a new type of power transfer technology. Compared with the traditional inductive wireless power transfer technology, the magnetic coupling resonant wireless power transfer technology has a longer transmission distance between the transmitting end and the receiving end. The sensitivity of the misalignment is smaller, so there are a large number of institutions currently studying the technology. It is important to maintain the resonant wireless power transfer system in resonance because whether the WPT system is in resonance affects transmission efficiency and output power. However, in the actual production environment, the wireless power transfer system is not easy to work in the resonance state due to factors such as load changes and environmental interference.

Methods: When the resonant WPT system is subject to external interference, the WPT system will deviate from the resonance state. In order to solve this problem, the phase-controlled capacitor circuit and the corresponding control algorithm are proposed. First, a data table is created. The data in the data table is sorted in ascending order of steps. The values in the table are used to control the conduction angle when the phase-controlled capacitor circuit is connected to the resonant tank of the transmitting end. This can change the impedance of the transmitting end. When the WPT system is detuned, the control algorithm uses the dichotomy to search the data from the data table and apply it to the phase-controlled capacitor circuit until the WPT system resumes resonance. The method for judging whether the WPT system is in a resonant state is that the phase difference between the current signal of the transmitting end and the voltage signal is less than the set error value.

Results: The simulation and experimental results show that the transmission efficiency and output power of WPT system are significantly improved at a transmission distance of 10 cm.

Conclusions: In this paper, a phase-controlled capacitor circuit and corresponding control algorithm are proposed. The working principle of the phase-controlled capacitor circuit is analyzed. The simulation results show that the phase-controlled capacitor circuit can solve the detuning problem of WPT system and the experimental results show that the transmission efficiency can be increased by 21.9% at a transmission distance of 10 cm.

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081 | Smart tourism overcoming the three bottlenecks of language, knowledge and software

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Objectives: This paper aims at solving the three bottlenecks of language, knowledge and software from the perspectives of tourists and tourism services.

Methods: The method is: in the process of introducing social media and emerging technologies into destination marketing and management, firstly, the combination of virtual and reality is adopted to give priority to the destination, and then, the combination of online and offline is used to

optimize matching tourists, and finally, the sticking between destination and tourist group is established. Social circle is characterized by the introduction of big data and machine learning accumulated by human-computer interaction systems designed, and the analysis and prediction of relevant information. Each community or circle has its own unique brand leadership, order-driven or combination of the two, which is the focus of our attention and exploration. The GLPS, GKPS and GSPS are used to overcome the "three bottlenecks" and realize the three basic steps of Smart Tourism Information processing: Steps 1 is natural language understanding; Step 2: is expert knowledge acquisition); Step 3: is software pattern recognition. The characteristics are as follows: To implant the cultural concept, lifestyle and thinking habits of smart tourism into the concept consciousness of Sino-American tourists, ideal human-computer interaction systems are needed.

Results: The expected results of this study are as follows: the sustainable development of characteristic tourism market at home and abroad can focus on tourism planning and blueprint description, characteristic tourism and its virtual experience, and in-depth tourism of various Sino-American tourists and their associations. Human-computer interaction system is its link.

Conclusions: The significance of this study lies in: firstly, the theory of cultural integration and its corresponding methods, which combine internationalization and localization accumulated by multinational corporations for a long time, are used for reference, optimized and transplanted to the organizations and individuals of smart tourism. This is undoubtedly an important thing. Then, the three bottlenecks of language, knowledge and software that smart tourism will inevitably encounter are put on the agenda as a key issue. This is undoubtedly another important thing. The specific advantages and examples are illustrated in the attached drawings.

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082 | A machine learning-based technique to help students learn programming

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Backgrounds: In this paper, we propose a machine learning-based technique that identifies a line of a computer program that needs to be fixed. The proposed technology is composed of (i) preprocessed phase for a source code, (ii) source code-vectorization phase that vectorizes the preprocessed source code, and (iii) learning and prediction phase that makes a machine learning model by learning from the existing data and applies it for predicting lines needed to be corrected.

Methods: The proposed technology consists of several phases. In the preprocessor phase, unnecessary parts of a source code such as blanks are deleted and tagging is done for later phases. In the source code-vectorization phase, each line of the preprocessed source code is vectorized by using the latest sentence-embedding method such as Paragraph Vector and Skip-Thought Vector techniques. In the learning and prediction phase, each line vector of the vectorized source code is used to generate a feature vector with the contents of each line and surrounding lines and a machine learning model is created by learning from feature vector data of the original source codes that students submitted. The part needed to be corrected is predicted by applying this model and at this stage, in addition to the line vector representing the relevant contents of line, (i) a contiguous line vector representing the information of the adjacent line, (ii) a block vector representing the information of block to which the relevant line belongs and (iii) a source code vector representing the entire information of the source code are concatenated to generate the feature vector. Classifier model in the learning and prediction phase uses the Logistic Regression. The Logistic Regression model learns and predicts the possibility of case occurrence from data.

Results: We evaluated the performance of the proposed technique against the Data Set submitted to an educational site intended to teach classes such as C and Java programming. The result of the experiment was that it was possible to provide a precise correction guide about which line needs to be modified with high possibility, 77% in C Data Set and 72% in Java Data Set, respectively.

Conclusions: This research proposed an automatic correction guide technology based on machine learning technique, guiding automatically a part of a computer program that needs to be corrected in an online programming education environment. The proposed technology is composed of the preprocessed phase about a source code text, the source code-vectorization phase that vectorizes the preprocessed source code and the learning and prediction phase that generates a machine learning model by learning from the existing data and apply to predict the line needed to be corrected.

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083 | Temperature and magnetic field induced magnetization reversal effects in co-doped Bi5Ti3FeO15 ceramics

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Objectives: The magnetization reversal at cooling or heating of ferrimagnetism was first predicted by Neel in 1948 in ferromagnetic systems. This phenomenon was assigned to the presence of two or more types of magnetic sub-lattices with different temperature dependent magnetic behaviors. As layered bismuth compounds with structures related to Aurivillius phase, $Bi_3Ti_2FeO_{15}$ (BTF) has been reconsidered as one of the candidates in multiferroics because of its potential magneto electric coupling behaviors. This paper is focused on the magnetization reversal effect which is found in the layered perovskite materials Co-doped $Bi_3Ti_2FeO_{15}$ for the first time.

Methods: Co-doped $Bi_5Ti_3FeO_{15}$ ceramics were synthesized by the standard solid-state reaction and starting materials in stoichiometric proportions with $x = 0.4, 0.5, 0.6, 0.7$. The crystalline structure of the samples was examined by x-ray diffraction (XRD) (PANalytical B.V., X`Pert PRO, Holland). The Raman measurements were carried out on a RENISHAW LabRam micro-Raman spectrometer under air ambient condition. The magnetic properties were investigated by a commercial physical properties measurement system (Quantum Design, PPMS-9, America).

Results: Zero field cooled (ZFC) and field cooled (FC) temperature dependent magnetization curves of $Bi_5Ti_3 (Fe_{1-x}Co_x)$ O_{15} ($x = 0.4\sim0.7$) ceramics were measured under 50 Oe from 5 to 300K. For all four samples, the ZFC curves are characterized by a peak and a valley, and the FC curves by a valley. It is worth noticing that the temperature points of the peaks and valleys of our samples with different Co content are almost the same. Based on the Raman measurement result, the Fe-O-Co interaction is strongest and the net moment of DM interaction is largest, which makes the ZFC and FC curves close to each other. And with the increasing magnetic field, T_{comp} in FC curves shifts toward the low temperature and with large enough field the magnetization changes from negative to positive.

Conclusions: In conclusion, we have observed an unusual zero magnetization phenomenon in zero magnetization phenomenon in Co-doped $Bi_5Ti_3FeO_{15}$ ($x = 0.4$–0.6) ceramics at a compensation temperature under an applied external magnetic field. It is remarkable that the magnetization reversal effect is observed both in ZFC and FC curves in our samples, and the compensate temperature changes with different Co content. The magnetization reversal effect is explained based on a competition between single-ion magnetic anisotropy and DM interactions.

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084 | The effect of electrolyte in the body on the athlete's body in football match

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Objectives: Electrolytes play a very important role in the maintenance of normal life activities. The movement body supplements the relative balance of electrolyte sodium and potassium ions, maintains the complete function and structure of the whole cell, summarizes the relationship between the electrolyte and the motor ability, and provides the theoretical basis for the athlete to replenish the electrolyte.

Methods: In a fierce football game, the distance the athlete runs is about 9000 meters-15000 meters, the overall energy consumption is about 2000 calories, the weight loss is about 3~4 kg or so. Causes the electrolyte in the body to be lost in large quantities with sweat. Causing the imbalance of electrolyte balance, muscle excitability and muscle spasm in vivo, dehydration, especially the cardiovascular system, the physiological function of the nervous system and the body's material metabolism of the corresponding obstacles, if the amount of body fluids is lost too much, there will be shock symptoms. Serious can often lead to death. The balance of water and electrolytes is regulated by the nervous system and certain hormones, which are mainly achieved through the effects of nerves, especially some hormones, on the treatment of water and electrolytes in the kidneys.

Results: The change of body function in football matches will directly affect the technical and tactical performance of athletes in the match.

Conclusions: To keep the electrolyte constant in the body, the human body should replenish the electrolyte properly in the game. Maintain body blood solvent balance, help nerve transport, regulate muscle contraction, and maintain acid-base balance.

085 | A construction method for a real-time monitoring system of the ventilator

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Background: The ventilator is one of the medical devices with the highest risk of clinical usage, which is frequently applied in first aid and life support. The stable operation of ventilators and the accurate, fast response of the medical workers to ventilator alarms, are directly related to the health or safety of patients. Studies have shown that more than 90% of the ventilator alarm messages are false positive alarms. The frequent occurrence of false positive alarms will quickly lead to alarm fatigue of medical staffs, and the neglect of urgent warnings will endanger the patients' safety. With the continuous improvement of the mechanical ventilation theory of ventilators, the control system and data acquisition system are being more and more complex. As the performance parameters of the device increase, the types of alarms for the ventilator also increase. Moreover, there are more than 100 alarm types of ventilator. Ventilator alarm is closely related to the patient state, equipment state, and equipment operation state. The synchronous signal of other devices will also cause "alarm burden" to medical staff which will lead to alarm fatigue.

Methods: The paper puts forwards to an establishment method for a real-time monitoring system for the ventilator. The monitoring system can be used to collect the real-time data and alarm data of all the ventilators in a hospital. All hospital ventilators should be connected to a server in a central control room, and the ventilator operating parameters and alarm information can be transmitted remotely to the server, and then, the curves and status of all ventilator operating parameters can be displayed on screens. When the value of a parameter of ventilator deviates the normal, the monitoring system will give an alarm. The position of the ventilator can be quickly located, and the causes of parameter deviation can be acquired as soon as possible. It will contribute to adopting effective measures to bring the parameters of the ventilator back to normal.

Results: According to the application of the method in a hospital, it can be concluded that the system can to some extent assist medical staffs in reducing the occurrence rates of false positive alarms and avoiding alarm fatigue, and preventing mistake occurrence in clinical diagnosis and treatment.

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086 | Study on the current situation of health industry in mountain qingcheng

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Background: With the increasing pressure of modern life and the improvement of living standards, the health industry continues to develop. As the world natural and cultural heritage protection and national 5A scenic spot, Mountain Qingcheng has unique location advantages in the development of health industry.

Methods: From January to April 2019, the author used on-site investigation, interviews and questionnaires to conduct investigations in several townships near Mountain Qingcheng, focusing on local recreational real estate, hotels, rural recreation, nursing homes and medical facilities.

Results: 1. At present, there are fewer buildings under construction and on sale, totaling no more than 10 projects, and the vacancy rate of sold projects is very high. 2. At present, there are 14 hotels in Qingchengshan, but the integration of most hotels and recreation industry is not close enough. There are no high-end health-keeping brands. There are more than 630 angertaniment and more than 10 000 rooms. Facilities and facilities have been greatly improved compared with those before the 2008 earthquake, but they are basically run by farmers themselves and have not yet formed a distinctive brand of recreation and recreation. 5. Although the number of nursing homes is large, the overall facilities are obsolete and the supporting facilities are not perfect. 4. There are only a few township hospitals and dozens of clinics in the area. The lack of high-end medical facilities and equipment affects the development of health care industry.

Conclusions: 1. Combining regional advantages, positioning to build a world-class health destination. 2. Accelerate the development of industrial linkage, make full use of the advantages of regional tourism resources, highlight cultural specialties, and build an integrated tourism and health industry 3. Accelerate the cultivation of enterprises within the health industry and the introduction of external, focusing on the need to build high-end medical institutions.

087 | An exploration and reasoning tool for linked open data

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Backgrounds: The Semantic Web is an extension of the WWW and it expresses data as a triple structure that consists of 'subject, predicate, object'. Linked Data consists of a lot of triples that represent knowledge about various subject domains and the number of triples keeps increasing. We present a system by which non-expert users can access the information available in the form of Linked Open Data (LOD). The goal of the research is to provide non-expert users with a simple-to-use system by which lay users can utilize or create Linked Data without difficulties.

Methods: We developed a system that allows users to search information based on entered keywords and supports a reasoning service based on Euler EYE engine (http://eulersharp.sourceforge.net/). To make the user-friendly interface, this system provides keyword search, shows searching results as a graph format and is based on node.js, jQuery, D3.js, and AJAX technologies. When a user wants to add an inference rule in the system, the user needs to set a premise and an inference result. The premise is a trigger for reasoning and by using a question mark, the user can set a universal quantifier with the name of it. For an existential quantifier, '[]' or '_:' can be used. We have evaluated the proposed system against 12 non-expert users. Each participant accessed the system using Chrome Web browser and spent about two hours to search various types of information. Most of them found the system useful in accessing the vast amount of information stored in the form of LOD. The system and its tutorial are available at https://bit.ly/2Rxfieq.

Results: After experiments, detailed comments were reported about advantages and disadvantages of the system. As a positive side of the system, most participants mentioned that the system shows an intuitive view of the results as a graph. They liked both keyword-based search as well as a search based on a property. On the other hand, some participants found reasoning services difficult to use. At least, they commented that as non-expert users, writing rules for themselves were very difficult. There were a few participants who mentioned that they would plan to use the system for their research.

Conclusions: The system supports two types of functions: (1) keyword-based search (2) reasoning over Linked Open Data based on inference rules. Specifically, the reasoning service can help users understand the importance of machine-readable form used in the Link Open Data since it can compute derived results by executing inference rules provided by users. While our system is targeted for novice users, it can be also used by domain experts who have knowledge on SPARQL so that they can make inferences over the data that they can find by executing SPARQL queries.

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088 | Portable device for visual performance examination and visual training

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Objectives: Most of the information sensed by human comes from visual sense. Myopia, amblyopia, etc. affect the perception of the outside world greatly. The project aims at the design of a portable device for visual performance examination and visual training based on machine vision and virtual reality (VR) technology. By showing images with specific parallax to both eyes, VR can deceive the brain to make it feel like a 3D scene. Some specially designed plane or stereo pictures and videos can be displayed to the human eyes through VR. The response of eyes to the visual stimulation can be detected through machine vision measurement, and the next stimulation can be performed according to the response.

Methods: Using the ray tracing method, a single-piece eyepiece is designed using the K26R material. The eyepiece images the smartphone screen to a virtual image in front of the eyes. The distance between the virtual image and human eyes can be easily adjusted by moving the eyepiece or the smartphone. Two micro-cameras are installed before each eye, which observes the eye from different perspectives. Using the parallax images from two cameras, stereo vision algorithm can be performed to detect the three-dimensional coordinate of the eye. Therefore, the movement of the eyes under the visual stimulation can be recorded, based on which the visual performance can be examined. Through performing specially designed visual stimulation, visual training is also possible and the feedback of the training can be obtained immediately.

Results: The designed VR device has a field view of 100 degree. The position of the virtual image of the smartphone screen can be adjusted from 0.25 m to infinity. When the virtual image is set to 5 m, the device can be used to measure diopter by displaying the letter "E" with different poses. When the virtual image is set to infinity, it can be used to relax the eyes. The resolution of the micro camera is 640*480, and the frame rate is 30fps, which is sufficient to detect the movement of the eyes. The micro cameras are connected to the smartphone directly to realize eye movement detection by the applications in the smartphone (Apps).

Conclusions: Based on this portable device, manufacturers can develop a wide range of Apps for different purposes, such as diopter measurement, amblyopia training, and so on. Based on the VR device, the users can download the Apps from different manufacturers according to their respective needs, which is easy and convenient to use.

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089 | A filament level analysis of multi-layer woven fabric with orthogonal construction influence of weaving process on mechanical properties

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Objectives: 3D woven fabric has been wildly used in fiber reinforced composite materials due to its excellence in overall structure, the micro-geometry of which varies along with the weaving process. This research presents the mechanical properties of Nicalon CG multi-layer 3D orthogonal weave fabric with different weaving process and analysis the effect of applied yarn tension on tensile strength.

Methods: First, the position matrix of the unit-cell topology of 3D orthogonal weave is defined to initiate the yarn level model. Second, three sets of constant tension are designed and applied to weft, warp, and weaver yarn ends respectively. Third, simulate the filament level 3D orthogonal weave with designated weaving process using Fabric Mechanics DFMA^{TM} software. Each yarn is discretized into 19 digital fibers with the same cross-section area before discretization to achieve varied cross-sectional yarn shapes along its path. Then, generate the solid yarn model correlating the actual imperfections arising from the manufacturing process and export the final geometry in .stp formate for finite element tensile strength analysis. Last, use commercial software ABAQUS^{TM} for mesh and stress analysis.

Results: The cross-section shape and yarn path of the weft, warp, and weaver yarn changes along with its applied tension. When the applied tension of weaver yarn increases, the fabric thickness and fiber volume fraction decreases, which results in a smaller fabric tensile strength. On the contrary, when the applied tension of weaver yarn decreases, the fabric thickness and fiber volume fraction increases, which results in a bigger fabric tensile strength. However, the effect of weft and warp yarn tension on fabric tensile strength is trivial.

Conclusions: The Fabric Mechanics DFMA^{TM} software is capable of generating an accurate sub-yarn level 3D orthogonal weave model and predicting its micro-geometry by means of different weaving process. Accurate modeling of 3D woven textile micro-geometry indicates the reliability of a predictive analysis for its mechanical property. For 3D orthogonal weave, the micro-geometry and tensile strength are visibly affected by the applied tension, especially the weaver which binds together the weft and warp yarns. The experimental results are validated by the simulation results.

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090 | Discussion on sports injury and prevention of skilled cheerleading athletes

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Objectives: Skill Cheerleading has been developing in China for less than 20 years. Compared with more than 100 years of history originated in the United States, this technology is a new sport in China. Due to the strong appreciation and performance of skill cheerleading in actual performance, it was quickly popularized in domestic universities. However, at the same time, due to the fact that skill cheerleading can frequently bring different degrees of sports injuries to athletes, these injuries have the characteristics of high incidence rate, wide range, severity of injuries, etc., and occur among athletes of different levels, which makes it difficult for athletes to train and promote normally.

Methods: Identification of Risks Brought to Athletes by Skill Cheerleading. Risk Identification of Physical Fitness. Risk Identification of Psychological Quality. Risk Identification of Team Spirit. Reasons for Sports Injury of Skilled Cheerleading Athletes. Factors of Athletes' Physical Quality. Individual Psychological Quality Factors of Athletes. Factors of Athletes' Individual Skills. Skill Cheerleading Sports Injury Defense Discussion. To Strengthen the Skills

Cheerleading Athletes Training Management Preparatory Activities. Strengthen Skills Cheerleading Athletes' Personal Physical Quality Improvement. Strengthen the Importance of Training and Recovery and Good Rest Habits.

Results: With the rapid development of cheerleading in China, various aspects have been improved to varying degrees, especially skill cheerleading, which has been continuously improved and strengthened in terms of technical difficulty, movement speed, movement intensity and movement range. At the same time, the risk coefficient during movement has also been continuously increased. With the constant increase in sports risk coefficient, the degree of injury to athletes is also increasing. Qiao cheerleading is a very popular sport among contemporary college students. If they are injured in the process of sports, it will not only bring harm to the body of college students, but also seriously affect their mental health, thus affecting the effective promotion of the sport.

Conclusions: Aiming at the problem of injuries caused to athletes by skill cheerleading, the article discusses the sports injuries and prevention of skill cheerleading athletes from the aspects of risk identification, causes of sports injuries and prevention of sports injuries. It is hoped that through the discussion in this article, the occurrence of sports injuries of skilled cheerleaders in cheerleading performance and practice can be effectively avoided, and the occurrence probability can be minimized, so as to promote the faster and more stable development of skilled cheerleaders in domestic universities.

091 | The VERA.TTF-1 and PTEN in endometrial cancer early pathological changes of the expression

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Objectives: In recent years, with the development of the traditional markers and the discovery of the new markers, immunohistochemistry plays an increasingly important role in the pathological diagnosis of the endometrial cancer. Immunohistochemical markers commonly used in the diagnosis of the endometrial cancer. The new markers with the important application prospects in the endometrial cancer include the insulin-like growth factor 2 mRNA binding protein, and hepatocyte nuclear factor 1-β, and ARID1A and so on. This project is to explore the relationship between TTF-1 and PTEN genes and the early pathological changes of the endometrial cancer based on the relevant theoretical basis and case studies.

Methods: Several cases of the endometrial cancer and the normal endometrium were selected. The expressions of vera. ttf-1 and pten were analyzed by the PCR method (RT-PCR), and the correlation was obtained.

Results: The expression of TTF-1 and PTEN in the endometrial cancer was significantly lower than that in other groups ($P < 0.05$). According to the ROC model, the sensitivity, specificity and accuracy of vera.ttf-1 were 85.5%, 83.2% and 0.812 respectively. The sensitivity, specificity and accuracy of pten were 84.5%, 84.5% and 0.832 respectively. TTF-1 and PTEN genes are important factors for the early diagnosis of the endometrial cancer. Therefore, it is of great practical significance and value to regulate and control them.

Conclusions: In conclusion, the loss of the PTEN function caused by the mutation and the loss of the expression of the PTEN gene is an early molecular event of the endometrial cancer and plays an important role in the development of the endometrial hyperplasia to the endometrial precancerous lesions. The inactivation of the PTEN gene mutation results in the complete non-expression or the low-level expression of the PTEN protein, thus losing the negative regulation of the cell growth and proliferation, and promoting the occurrence and development of tumors. Therefore, the detection of the PTEN protein deficiency by the immunohistochemical method may be a good biomarker for the early diagnosis of the endometrial adenocarcinoma and the precancerous lesions.

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092 | Abundance and activity of aerobic ammonium-oxidizing bacteria in surface sediments at estuaries of dianchi lake

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Objectives: Excessive nitrogen input will lead to a series of major environmental problems. It is estimated that the

water environmental carrying capacity of nitrogen pollutants in Dianchi Lake is about 1456.16 tons per year. However, the average amount of nitrogen pollutants entering the lake is about 10940 tons per year over the years. Now the water quality of Dianchi Lake exceeds category V, making it one of the most polluted lakes in China. The study on the ammonia oxidation process and the microbial driving mechanism in the unique ecosystem of estuaries of Dianchi Lake is still weak. Is there a significant correlation between the potential nitrification rate and the abundance of aerobic ammonium-oxidizing bacteria (AOB) and ammonia-oxidizing archaea (AOA)? What are their contributions to the aerobic ammonia oxidation process? These problems are the focus of this paper.

Methods: The surface sediments at the estuaries of Chaihe River, Baoxiang River and Panlong River into Dianchi Lake are research objects in this paper. Based on the method of rapid determination of soil potential nitrification rate through ISO 15685-2012 ammonia oxidation, the relations between the abundance and activity of aerobic ammonium-oxidizing bacteria in winter and summer are studied through the fluorescence quantitative PCR method and the experiments of inhibiting nitrite-oxidizing bacteria (NOB) and ammonia-oxidizing bacteria (AOB) with specific inhibitors, chlorate and ampicillin respectively.

Results: In surface sediments at the estuaries of Dianchi Lake, the gene abundance of AOA-amoA is higher than that of AOB-amoA. The gene abundance of AOA-amoA and AOB-amoA do not show significant seasonal differences, but represent significant spatial differences. The potential nitrification rate is significantly higher in summer than in winter. After adding ampicillin to inhibit bacterial activity, the potential nitrification rates do not decrease significantly. The nitrification rate has significant positive correlation with AOA-amoA gene abundance in both winter and summer; it does not have significant correlation with the AOB-amoA gene abundance.

Conclusions: In the surface sediments of the Dianchi Lake estuary, the ammonia-oxidizing archaea (AOA) carrying amoA gene contributes more to the aerobic ammonia oxidation process and plays a more important role than AOB flora.

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093 | Clinical analysis of the perioperative pulmonary complications in patients undergoing the thoracic surgery

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Objectives: Because the majority of the elderly in the thoracic surgery use the general anesthesia and the tracheal intubation, and the operation anesthesia lasts a long time, the patients fear pain or are afraid of affecting the wound healing and do not dare to cough and turn over, so the occurrence of the pulmonary complications is relatively common. After the operation, according to the actual situations of the patients, the author gave them the early turning over, adhered to the abdominal breathing, cooperated with the nebulization inhalation, the nasal catheter sputum suction and other respiratory tract nursing, and achieved the satisfactory results. Therefore, it is considered that the occurrence of the pulmonary complications can be prevented by the active respiratory nursing management measures.

Methods: Postoperative management. Management during the operation. Clinical anesthesia methods. Pre-operative preparation. Preoperative assessment. General information.

Results: Guide the patients to carry out the necessary activities after the operation and start from the bed activities. After the recovery conditions permit, carry out the bed activities, so as to increase the vital capacity, and play a preventive role in the occurrence of the complications. The effective sputum expectoration nursing in the thoracic surgery is one of the important measures for the successful operation, and it is also an effective way to prevent the postoperative complications. During the recovery period after the operation, which can increase the vital capacity and reduce the complications such as the pulmonary infection and atelectasis. However, appropriate activities should be taken to prevent accidents. The drug intervention can be used to relieve the pain in order to get the effective rest, promote the recovery and avoid the occurrence of the weak cough.

Conclusions: Patients undergoing the thoracic surgery were given the general anesthesia, with the endotracheal intubation. Patients lost spontaneous breathing for a long time and increased the respiratory secretions were stimulated by the endotracheal intubation. In this group, 11 cases were anesthetized within 2 hours. No atelectasis or pulmonary infection occurred after the operation, which indicated that the management of the respiratory tract during the perioperative period was very effective.

After the thoracotomy, the patient's cough and turning over can cause the wound pain, so that the patients dare not cough and turn over. If he is not given the respiratory care for a long time, the sputum is sticky and it is more difficult to cough out. And, therefore, the early respiratory care is very important.

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094 | Study on the effect of fertilizer synergists on banana agriculture

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Objectives: Banana is an important fruit crop in South China. It needs a high amount of fertilizer. In recent years, due to the decline of the economic benefits of banana planting, it is urgent to reduce the cost of the fertilization and improve the efficiency of the fertilization. In this paper, banana and dwarf banana were used as the experimental materials to evaluate the benefit of the fertilizer synergist on the crop yield and its specific impact on the crop growth. Relevant fertilizer test data showed that the ratio of nitrogen, phosphorus and potassium was 1:0.2-0.5:1.5-2.5. The potassium application rate of plantain, pink banana and Longya banana should be higher than that of banana. The yield of the organic fertilizer and the inorganic fertilizer is higher than that of the single application, and the product has good flavor, good storage and transportation resistance, and strong stress resistance, especially in banana plantations with low organic matter contents.

Methods: Effect of fertilizer synergists on the agricultural effect of banana and fertilization. Increasing the crop yield and increasing the economic income. Enhancing the banana resistance. Fertilization scheme.

Results: The specific methods can be applied according to the actual situation or under the guidance of the local agricultural technology departments.

Conclusions: Banana is a popular fruit. Its unique fragrance can not only satisfy people's appetite for foods, but also supplement vitamins and trace elements. It is popular with people. Therefore, many provinces in Southern China have planted bananas. For farmers, how to increase the production and income is the most important topic. It is very important for bananas to increase the production of the base fertilizer.

Whether the amount of the base fertilizer is sufficient or not is directly related to the commercial performances of bananas and the wintering performances of bananas. Therefore, sufficient base fertilizers should be given in the production. Studying the effect of the fertilizer synergists on the banana agriculture will provide important guarantee for the improvement of the banana yield and quality.

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095 | Blood cells for the differentiation of AECOPD airway inflammatory phenotypes

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Objectives: Measurement of sputum is the gold standard test for defining airway inflammation phenotypes. Peripheral blood cells are simple and accessible biomarkers, may be a useful method to quantify sputum inflammatory cells to access the phenotypes. This study is to test the hypothesis that peripheral blood cells can reflect the airway inflammatory phenotypes in acute exacerbations of chronic obstructive pulmonary disease (AECOPD) and to determine the accuracy of these biomarkers.

Methods: A total of 287 patients with AECOPD were included in this study. All patients performed the tests on the same day: spirometry, bronchodilator reversibility, sputum and blood collection. This was a retrospective study.

Results: There was a relationship between the percentage of sputum eosinophils and blood eosinophil cells, blood inflammatory cell ratios. A weaker but correlation was between the percentage of sputum neutrophils and blood neutrophil parameters. There was no relationship between sputum neutrophils and blood eosinophil/lymphocyte ratio (ELR), blood neutrophil/macrophage ratio (NMR). The percentage of blood eosinophils was predictive of sputum eosinophilia at cutoff point of 0.55% [area under the curve (AUC) = 0.672, $P = 0.012$]. The optimum cutpoint for the absolute blood eosinophil count was 0.35×10^9/L with an AUC of 0.626 ($P = 0.025$). The blood ELR, eosinophil/neutrophil ratio (ENR) and eosinophil/monocyte ratio (EMR) were increased in eosinophilic and mixed granulocytic AECOPD, the neutrophil/lymphocyte ratio (NLR) was increased in neutrophilic AECOPD.

Conclusions: Eosinophil and neutrophil parameters were a correlation between sputum and blood. Blood eosinophils and its derived ratios (ELR, ENR and EMR) may be used to detect airway eosinophilia in AECOPD. Based on weak correlations and poor prediction values further investigations would be required.

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096 | Study on indicators and methods of forest ecosystem health assessment

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Objectives: In order to better evaluate and analyze the health status of the forest ecological environment system, this paper mainly combines the existing literature data to sort out and analyze various indicators and methods of the health evaluation of the forest ecological environment system, hoping to provide the basis for the efficient development of the special evaluation of the health status of the forest ecological environment system in the future and facilitate the further improvement of the accuracy and efficiency of the comprehensive evaluation of the health status of the forest ecological environment system.

Methods: (1) Literature retrieval methods. Firstly, research reports, academic papers, books, magazines and collected articles related to various indicators and methods of health assessment of forest ecological environment system at home and abroad are searched, and relevant research results such as various indicators and methods of health assessment of forest ecological environment system are systematically sorted and summarized and analyzed, so as to provide valuable reference or basis for effective application research of various indicators and methods of health assessment of forest ecological environment system. (2) Interdisciplinary research methods. In order to further study the relevant knowledge of various indicators and methods of health assessment of forest ecological environment system, and to thoroughly and comprehensively understand the health assessment model, indicators and methods of forest ecological environment system, the latest research results of health assessment of forest ecological environment system can be fully understood by participating in the exhibition with the help of interdisciplinary research methods, so as to provide the most timely information for the in-depth study of this topic. (3) Field research methods. The research of this subject covers various fields such as agro-forestry, soil and water conservation, environmental science, and detection science. It needs to apply various subject methods, basic theories and achievements, and comprehensively study this subject from the overall perspective to ensure the objectivity and accuracy of the research of this subject.

Results: There is no unified evaluation index and method in China due to the outstanding complexity of forest itself and high difficulty coefficient in health evaluation. The existing methods mainly include index comprehensive evaluation, hierarchical analysis, hierarchical analysis and fuzzy comprehensive evaluation.

Conclusions: From the overall analysis, the quantitative evaluation research on the actual health status of the forest ecological environment system needs to include various scientific technologies, methods and methods within 3S science and technology to provide support. This will also be the mainstream direction for the future evaluation research on the health status of the forest ecological environment system. Relevant experts and scholars need to work together to facilitate more reliable, accurate and accurate evaluation of the health status of the forest ecological environment system and continuously improve the professional level of evaluation.

097 | Research on the differences in the destination online image perception of inbound tourists based on the big data of UCG pictures

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Objectives: The image of the tourist destination has gradually become an important part of the sustainable development of the tourist destination. How the potential tourists make choices among many potential destinations and what characteristics and rules the potential tourists' perception of the destination image presents are the research propositions of this paper. Some studies have pointed out that for places not visited, potential tourists' destination image depends on their personal image, which is formed through the social networks and is widely shared, possibly from their understandings of the history and cultures of the destination.

Methods: Connotation analysis of the big data in the UCG pictures. Destination online image analysis of inbound tourists. Research on the differences of the destination online image perception of inbound tourists based on the big data of UCG pictures.

Results: The description of this study cannot fully represent the overall impression of China. In the future, we can use the same method to study other major source countries such as the blogs from Japan and South Korea and so on, in order to obtain a complete understanding of China's images. In addition, the demographic information of the blogs is unknown. Therefore, their views may not fully represent the views of all tourists. Future researches should focus on those websites that provide the demographic information or the blog hosting. The travel blog analysis can be divided according to different market segments. Therefore, the result will be the more meaningful target marketing.

Conclusions: Based on the development of the intelligent information technology and the changes of the experience-oriented tourism mode, this paper studies and analyzes the problems of the current intelligent tourism system in the information data, the application and services, the stakeholder linkage and the security system from the perspective of the user-generated contents. Combined with the innovative service design process and focusing on the system composition of the intelligent tourism services, the feasible strategy proposals are put forward in the government management, e-commerce, scenic area services and information construction modules, which can improve the tourists' intelligent tourism experience, and valuable planning and suggestions for the future development of the intelligent tourism are put forward.

098 | Can medicare reduce catastrophic health care costs for residents? — Practical proof from China

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Objectives: Catastrophic health expenditure (CHE) is defined as the proportion of medical and health expenses paid by families in cash in the family consumption exceeds a certain definition standard. In the event of catastrophic medical expenditure, a family not only needs to reduce the consumption of necessities such as houses and food and other goods and services in the current period, but also may smooth the consumption in the current period by selling assets or borrowing in the long run, thus leading to the reduction of household assets and even the accumulation of massive debts. World Health Organization (WHO) suggests that the standard of CHE should be defined as the expenditure on health of a family accounts for 40% or more of that on non-food

consumption, and this family has catastrophic medical expenditure (WHO, 2003).

Methods: Model specification and data declaration.

Results: Through the empirical analysis of the 2013 data of Chinese Health and Retirement Longitudinal Survey (CHARLS), this paper found that there was a significant positive correlation between basic medical insurance and residents' self-pay medical expenses when they were hospitalized, but there was a significant negative correlation between commercial medical insurance and residents' self-pay medical expenses when they were hospitalized. In this aspect, government departments needed to strengthen the control of medical costs, implementation of managed care mode, set up specialized health management organizations, establish the incentive-restrictive mechanism of "benefit-sharing, risk-sharing", manage the whole process of medical service, strengthen the cost consciousness of the medical institution in order to make it take the initiative to control the applicant to accept the medical service frequency, and strictly control the medical expenses. On the other hand, the multi-level medical security system should be improved; the development of commercial medical insurance for major diseases should be promoted, and the incidence of catastrophic medical expenditures should be reduced, so as to curb the widening gap between rich and poor families caused by diseases.

Conclusions: The research in this paper also has some limitations: afterwards, moral risk shows that residents with medical insurance are more inclined to overuse medical services, which is an important factor for the rapid growth of medical expenses. However, the normal release of medical demand brought by medical insurance will also cause the rapid growth of medical expenses. Through whether there is out of relationship between medical costs and living expenses to distinguish the rising cost of health care is a natural release of medical needs or the function of moral hazard is a good method, but a serious lack of living expenses didn't strictly distinguish the moral risks brought by medical insurance and release of normal medical demand, which is one deficiency in this paper.

099 | Research on lithium ion battery electrolyte based on high safety

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Objectives: The lithium-ion batteries have been widely used in small digital electronic products due to their advantages of the high energy density, the high output voltage, the long

cycle life and the low environmental pollution. They also have broad application prospects in the electric vehicles, aerospace and other fields. However, in recent years, reports of fires or explosions caused by the lithium-ion batteries have been common. The safety of the lithium-ion batteries has aroused the widespread concern, which is the main obstacle to the industrial upgrading of the lithium-ion batteries in the power and large-scale energy storage fields. This paper mainly focuses on the research of the high-security lithium-ion battery electrolyte, involving the thermal stability and the electrode compatibility of the flame-retardant/non-flammable electrolyte, the ionic liquid electrolyte and the common electrolyte.

Methods: Experimental preparation. Experimental result. Experimental analysis.

Results: In the first charging process of the liquid lithium ion batteries, the negative material graphite and the electrolyte react to form the SEI film for the first time. The good SEI film can improve the safety performance of the batteries. The following is the quantum chemical calculation results using the Vinylene carbonate (VC) as the additive. Its main function is to inhibit the decomposition of the electrolyte, make graphite negative electrode form a good SEI film and improve the reversibility capacity and the stability of the electrodes. In addition, the overcharge protective additives and the flame retardants with the high boiling point and the high flash point can be added as the additives to the electrolyte to ensure the safety performance.

Conclusions: The application of DMMP as the flame retardant additive and the co-solvent in the lithium-ion batteries was systematically studied. The compatibility between the DMMP-based electrolyte and the carbon-based negative electrodes was improved by the film-forming additive. The application of the DMMP-based electrolyte in the new 3V Li Ni0.5Mn1.5O4/Li4Ti5O12 battery was also explored. The effect of the cell formation temperature on the compatibility of the flame retardant electrolyte with the carbon negative electrode was investigated for the first time. It was found that the high-temperature formation was beneficial to the formation of more stable SEI film, thus inhibiting the reduction decomposition of the electrolyte. In this paper, the effect of the lithium salt concentration on the conductivity of the ionic liquid electrolyte and the performance of the battery were investigated. Through the reverse thinking, carbonate with the low viscosity and the low melting point was used as the additive of the ionic liquid. Without damaging the safety of the electrolyte, the rate performance and the low-temperature performance of the battery were significantly improved.

100 | Simulation study of the restoring force model of the steel-concrete composite structure

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Objectives: The horizontal low-cycle cyclic loading tests are carried out on the composite frame structures composed of the steel-concrete composite beams and the concrete filled steel tubular columns. Taking into account the changes of three design parameters, i.e. the column axial compression ratio, the beam-column linear stiffness ratio and the slenderness ratio, the characteristics of the composite frame skeleton curve and the load-displacement hysteretic curve are analyzed, and the influence of each parameter on the skeleton curve and the hysteretic curve of the composite frame structure is studied. Based on the analysis results of the system parameters, the restoring force model of the skeleton curves and the load-displacement hysteretic curves of the composite frame structures considering the effects of various parameters is proposed. The calculated results of the model are in good agreement with the experimental results, which provides a theoretical basis for the non-linear seismic analysis of the composite structure systems.

Methods: Lane layout structure, symmetry, and uniform variation of the mass and stiffness. Guaranteeing the ductility and the seismic resistance of the structures. Seismic structural system with the multichannel fortification. Increasing the seismic defense line by using the redundant components. Reinforcing the interconnection of the components.

Results: The steel-concrete composite rigid frame bridge is also a representative type of the bridge structure. After the piers and beams of the rigid frame bridges are consolidated, due to the action of the vertical loads, the negative bending moments will be formed at the end of the main girder, and the positive bending moments in the middle of the span will be reduced eventually, and the cross sections in the beam span can be reduced accordingly.

Conclusions: At present, there are many kinds of the pier-beam joint structures of the composite rigid frame bridges. The most widely used of these structural forms are the steel bar anchored joint and the steel column joint. Relying on the transmission force of the main reinforcement anchored in the pier, the anchorage length of the main reinforcement is needed, and the construction process is complex and the concrete pouring quality in the joint core area is difficult to guarantee. The steel column joint welds the steel beam bracket on the steel main beam and buries the steel bracket into the pier to form the whole force, which has the good overall working performance. But the construction is more

complex, and the reinforcement and the steel bars in the joint area are difficult to guarantee. The staggered steel frame affects the quality of concrete pouring in the joint core area. Therefore, the steel sleeve pier-beam joint structure should be adopted.

101 | Carvacrol ameliorates cartilage degeneration in interleukin-1β-stimulated rat chondrocytes

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Objectives: At different time points, the absorbance values of the 1, 10, 100 μg/L interleukin-1β group were significantly different from those of the control group (P 0.05, P 0.01). The absorbance of interleukin-1β at the same concentration at 24 and 72 h was significantly different (P0.01). The absorbance of chondrocytes treated with interleukin-1β and aminoguanidine (100 μmol/L) for 72 h was significantly higher than that of the interleukin-1β (P0.01). The interleukin-1β can promote the expression of the nitric oxide in chondrocytes in a dose-dependent manner. The interleukin-1β promotes the expression of the matrix metalloproteinase-1 (MMP-1) and the matrix metalloproteinase-3 (MMP-3) in chondrocytes, but the expression of MMP-9 in chondrocytes was not detected in this experiment.

Methods: Analysis of the characteristics of carvacrol. Analysis of the characteristics of interleukin-1β. Carvacrol ameliorates cartilage degeneration in interleukin-1β-stimulated rat chondrocytes. Effect of carvacrol ameliorating cartilage degeneration in interleukin-1β-stimulated rat chondrocytes.

Results: Eight groups were set up in the experiment. The control group and the GH group with concentration 10 ng/ml, 20 ng/ml, 50 ng/ml, 100 ng/ml, 200 ng/ml, 500 ng/mL and 1000 ng/mL were set up respectively. Each group had three repeats. After 48 hours of the routine culture, the chondrocyte type II collagen expression was detected by RT-PCR. After 24 hours of starvation, the chondrocyte was cultured in the DMEM/F12 medium containing 0.02% fetal bovine serum. Different concentrations of GH were added. After 24 hours, chondrocyte was lysed by Trizol, and the total RNA was extracted, and RT-PCR was performed using Toyobo's two-step method. The amplified products of PCR were electrophoresis. The gray value of the electrophoresis strip was analyzed by GENE GENIUS gel imaging analysis system and the matching software. The relative expression of the type-II collagen in chondrocytes of each concentration group was obtained by comparing the ratio of the type II collagen to β-actin.

Conclusions: The measured data were expressed as the mean ± standard deviation (x±s), and the t-test was used. The counting data were expressed by the rate and tested by χ2. The maturity measurement uses the descriptive analysis. Group B was significantly higher than the other two groups 7 days after the modeling, and the difference was statistically significant.

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102 | Effects of kinesio taping on rehabilitation and prevention of sports injury

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Objectives: With the increasing popularity of competitive sports and national fitness, sports and rehabilitation medicine have also achieved rapid development in recent years. Prevention of sports injury and improvement of sports performance have become the development direction of sports medicine. As a non-invasive treatment for the treatment and prevention of sports injury, Kinesio Taping is frequently used by professional athletes and sports enthusiasts because it is characterized by stable effect, easy-to-use and non-influence on sports performance. Based on the summary of Kinesio Taping and sports injury, the mechanism of effects of Kinesio Taping in the rehabilitation treatment and prevention of sports injury is expounded, and its application in the treatment and prevention of acute and chronic sports injury is summarized as follows.

Methods: Kinesio Taping was originally a non-invasive treatment method for sports injury. It tries to realize the aim of protecting skeletal muscle and improving sports performance, mainly through using elastic tape to fix skeletal muscle. With an extensive study on Kinesio Taping, more therapeutic effect has been dug out, and Kinesio Taping has got greatly promoted in the sports medicine and rehabilitation medicinal specialty. Through the in-depth study of Kinesio Taping, it can be widely used in sports medicine and rehabilitation medicine in the treatment and rehabilitation, providing

more patients with a safe, effective and convenient method of diagnosis and treatment.

Results: According to the mechanism of action of Kinesio Taping, it can increase the gap between skin and subcutaneous connective tissue cells by pulling the skin, promote the circulation of blood and lymphatic fluid, facilitate the discharge of edema and inflammatory tissue fluid, promote the repair of injury, thus to reduce swelling. Nevertheless, after conducting studies, some scholars have found that the treatment effect that Kinesio Taping exerts on reducing swelling for normal people with acute sports injury is not obvious, but for open-chest operation patients, the effect of inhibiting respiratory pain is obvious. Consequently, for the treatment of sports injury symptoms of acute period to eliminate swelling, Kinesio Taping should be chief adjuvant therapy and it cannot be entirely depended on.

Conclusions: To sum up, Kinesio Taping has certain curative effect on the treatment of pain and swelling of acute and chronic sports injuries, but it has certain limitations. Most of it should be used as auxiliary treatment, so the disease case should be correctly analyzed and the treatment should be conducted after illness condition evaluation. Kinesio Taping can prevent sports injury to some extent, but there is insufficient experimental data to support the improvement of sports performance. In the future, physicians and rehabilitation therapists should study the specific effects of Kinesio Taping and apply it in treatment and prevention accordingly.

103 | Study on the extraction, purification and analysis of total saponins of codonopsis pilosula

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Objectives: Taking the yield of the Codonopsis pilosula saponins as the index, four factors affecting the ultrasonic extraction of the Codonopsis pilosula saponins were investigated: the ratio of material to liquid, the mass fraction of ethanol, the ultrasonic time and the ultrasonic power. On the basis of the single factor experiment, the response surface analysis (RSA) with 3 factors and 3 levels was used to analyze the significance and interaction of each factor.

Methods: Water decocting method; Impregnation method; Percolation method.

Results: In the experiment of determining the total saponins in Codonopsis pilosula, we found that the quality of the phenol reagent had some influence on the determination of the polysaccharides. The results of the phenol reagent prepared every other day were higher. Therefore, the phenol reagent should be fresh prepared and stored in dark. There are many methods to extract polysaccharides, such as the hot water extraction, the dilute alkali extraction, the dilute acid extraction, the enzymatic hydrolysis, the ultrasonic extraction, the microwave extraction, and the ultrafiltration and so on. The traditional hot water extraction method is mostly used. The method is stable and the extraction rate is high.

Conclusions: There are only the microscopic identification and the TLC identification under the Codonopsis pilosula of the People's Republic of China in the 2010 edition, and there is no quantitative evaluation method. In this study, the content of the Codonopsis ethinylglycoside, a specific component of the Codonopsis pilosula, was determined, and the content of the total saponins and polysaccharides was also determined. The results showed that the contents of the Codonopsis alkyne glycosides and the total saponins in Codonopsis pilosula were similar, but not related to the contents of the total polysaccharides. Therefore, the quality control of the Codonopsis pilosula by the quantitative index of the Codonopsis pilosula acetylene glycoside needs further study.

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104 | Research on component assembly framework based on XCM model

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Objectives: The component assembly model based on XCM defines the component from the component selection and instantiation, the component connection from the component interface, the component assembly from the component event mechanism and the container-based deployment. Therefore, this paper attempts to define an XCM-oriented component assembly framework, which partially implements the component-based production of the software systems, so that the software framework is no longer a conceptual model in the abstract sense, but an executable code that can be used as components for the large-scale software reuse.

Methods: In this paper, a component assembly model based on XCM (Component ontology model) is proposed on the basis of the widely accepted XML as the component description mechanism. The XCM assembly model includes the core attribute groups such as the component attributes and the description of events and methods. This model can provide standards for the component assembly from different

component models, thus effectively reducing the incompatibility of the component assembly from different component models. At the same time, the model also provides the mapping of components in the deployment phase and the self-examination mechanism they need in the assembly phase.

Results: The component model based on XCM is described by XML, which makes it easier for different individuals and different software to reach consensus on the information structure that needs to be exchanged on the Internet. At the same time, compared with other component descriptions, on the one hand, it is based on the component ontology and can map the component source code through the automation tools. On the other hand, it eliminates the differences between different component models and can provide a unified description for different component models, so it can alleviate the incompatibility of the assembly.

Conclusions: The component assembly technology is widely used in the practical projects, and of course, this application is basically a manual application. Starting from the component model based on XCM, this paper describes a basic component description tree and establishes an architecture assembly framework based on it. Using this framework, this component assembly method is partly used in the government e-government system and has a certain practical application value. However, how to use this framework to achieve the large-scale software component assembly still needs to be solved in the aspects of the assembly mode, the assembly language and the assembly tools.

105 | Design of special cleaning tool for safety of roller and chassis in silk making workshop

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Objectives: In order to eliminate the smoke and dirt on the surface of the conveyor belt and the smoke on the chassis thoroughly, and improve the efficiency of the cleaning personnel and reduce the fatigue of the cleaning personnel, a special cleaning tool for the roller and chassis safety of the silk workshop is designed.

Methods: Safety special cleaning tool is composed of a compressed air quick connector, handle, connecting rod, compressed air blowing hole, the blade head (socket). The compressed air for quick joint copper joint; wooden hand round handle; connecting rod length of 150 cm stainless steel hollow tube; the compressed air blowing hole is a small hole on the connecting rod, the blade head (concave head) edge roller shovel edge with compressed air blowing roller and chassis.

Results: The application of the safety and cleaning tool will eventually escort the quality of the product.

Conclusions: The application results show that the application of special cleaning tools for the safety of idlers and chassis in the silk production workshop has shortened the cleaning time, and now the cleaning of three idlers and chassis on a conveyor belt has been shortened from 45 minutes to 20 minutes. At the same time, the potential safety hazard caused by excessive physical consumption of cleaning personnel due to long cleaning time is avoided. The equipment cleaning and rectification rate have been increased from the original average of 75% to 100%. The risk of sundries generated by edge grinding due to the deviation of the conveyor belt caused by scale on the surface area of the roller on the conveyor belt is also reduced to 0.

106 | Research on the construction of the scientific service system of university libraries in the era of the big data

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Objectives: In addition to the paper and the electronic resources, university library resources also have the resources generated by the users themselves. In the era of the big data, it is no longer possible to evaluate the libraries solely by their collections. The key is to excavate and apply various digital resources to each other. The premise for the libraries to provide the personalized services is to know the users.

Methods: College libraries are facing a simple user group with the high utilization. Through the log analysis of these groups' daily use of the data resources, and the synthesis of their personal information, we can make highly directional information push. Libraries can establish their own professional navigation database and professional database to facilitate the users to obtain information quickly, comprehensively and accurately. The libraries should build and share together,

and share their advantages. Build a sharing platform, open their electronic resources to this platform, and conduct the data mining and analysis to provide users with the efficient retrieval mode.

Results: Library services should not only stay at the level of providing information for users, but also transform this information services into the knowledge services, instead of simply viewing users' search behaviors as the document retrieval. The essence of the knowledge service is to focus on the user problem solving, integrate it into the process of the user problem solving, and strengthen the exploration of various solutions. Using the big data technology, we can mine all kinds of the data and information, organize and retrieve all kinds of messages, provide more relevant information for users, and help users expand their horizons and solve problems better.

Conclusions: The integration of library's specific business activities and the service science is embodied in the renewal of their service contents and the innovation of their service modes. By implementing the one-stop knowledge service process, libraries can integrate the knowledge and the information scattered in different spaces and can provide them to readers. At the same time, through the memory function of the system, the service process is recorded and sorted into the information collection technology materials that users can quickly grasp. In this way, the user training and education are also integrated into the service process, forming the interaction of their knowledge service activities, librarians and users. Integrating the concept of the service science in the service practice requires librarians to consciously cultivate the multidisciplinary knowledge literacy, and to complement each other through the collaborative service mechanisms in their service activities, and then summarize the new knowledge innovation system generated in practice into the theoretical system.

107 | Application of the computer virtual reality technology in the environmental art design

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Objectives: Traditionally, environmental art geographical environment is described by the two-dimensional images, and the environmental information acquired lacks intuition and interaction. Therefore, the three-dimensional virtual reproduction of the environmental art is studied, and different entity models and terrain models in the virtual environment are modeled by the Creator modeling software. After collecting the original environmental data, the edge of the environmental data is processed to generate a three-dimensional environmental design system. The database management model of the large terrain environment is used to realize the database management in the environment. In

the process of the three-dimensional virtual reproduction of the environment, the three-dimensional scene of the environment is modeled by the Vega driver software, and the dynamic and the static environment simulation and the simulation effect are realized by the Marine environment module in Vega. The results show that the effect of the computer virtual reality technology in the environmental art design is more realistic and intuitive, and the interactive operation can be achieved and the satisfactory results have been achieved.

Methods: The application of the virtual reality technology in the environmental art design has a high demand for the image processing technology.

Results: In recent years, the development of the virtual reality technology is very fast. Compared with the traditional environmental art design, the application of the virtual reality technology in the environmental art design can break the traditional thinking restriction and make use of the comprehensive design expression mode. In this way, the transmission channel will not be greatly affected, so the generation and transmission of the design information will not be affected, and the two-dimensional ruler will not be affected. Regulations also have less impact on the forms. Using the virtual reality technology, the environmental art design work is more convenient, and various types of the spatial environment data can be used.

Conclusions: The future development of the virtual reality technology is to continuously improve the equipment and strengthen the processing capacity, which can ultimately be better applied to the environmental art design, so that the environmental art design can get better development and fully tap the potential of the environmental art design, reflecting the delicate and complex characteristics of the environmental art design. The environmental art design work utilizes various virtual reality technologies and tools to obtain rich resources and continuously develops its theoretical research and application research.

108 | Application of CA authentication technology in electronic medical record system

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Objectives: With the introduction of the concept of paperless medical records management, the rapid development of network information technology and the continuous popularization of electronic medical records, the security of electronic medical record systems is particularly important. This paper is to improve the safety of electronic medical record

information, to make electronic medical records have the same legal effect, and to improve the efficiency of medical personnel.

Methods: Combined the security problems and CA certification features of electronic medical records, this paper takes the legality requirements of CA certification technology in the electronic medical record system, the users' identity authentication requirements, the traceability and non-repudiation requirements of both doctors and patients as the starting point.

Results: Based on the CA certification technology, a set of security certification schemes and processes are designed to ensure the security and access control of personnel identity, the completeness and validity of data, and the security and non-repudiation of transmission process data.

Conclusions: The application of CA certification technology in electronic medical record system will not only improve the security of electronic medical record information, but also make electronic medical record have the same legal effect. Meanwhile, it can also save costs, improve work efficiency, improve the safety management concept of medical personnel and trustworthiness to patient, and lay the foundation for the early implementation of paperless medical record management.

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109 | Study on the technology of extracting polysaccharides from the polygonum hydropiper l. by the internal boiling method

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Objectives: In this paper, the internal boiling method was used to extract polysaccarides from the Polygonum hydropiper L. using the dry water whole plant as raw material. Principle: Use a small amount of the ethanol to wet the material, to make the polysaccharide dissolve. Then, add hot water to make the ethanol inside the material boil, to quickly extract the polysaccharides. Finally, the content of the crude polysaccharides was determined by the phenol-sulfuric acid method and the visible spectrophotometer method.

Methods: Preparation of the reference solution; Preparation of the sample solution; Standard curve determination; Determination of polysaccharide contents; Pre-experiment of the polysaccharide extraction of the Polygonum hydropiper L.

Results: In this paper, polysaccharides in the Polygonum hydropiper L. were extracted and determined by the internal boiling method, while the phenol-concentrated sulfuric acid colorimetry and the visible spectrophotometer were used for the content determination. In the experiment of this paper, the first step is the single factor experiment. The effects of the water-material ratio, the extraction temperature, the extraction time and the ethanol volume fraction on the extraction efficiency of polysaccharides in the Polygonum hydropiper L. were investigated and analyzed. Then, the orthogonal experiment was designed, and based on the single factor experiment, according to the level of the relevant significant factors, the L9 (34) orthogonal experiment table was selected for the experiment design.

Conclusions: This paper is to optimize the extraction process of the small dosage of the raw material of the Polygonum hydropiper L., which can be used as a theoretical reference for the pilot-scale industrial production. Polysaccharides have a variety of the biological activities and have a broad development prospects and utilization value. The traditional extraction method used in this paper is simple, with the low cost and the good stability, which can provide a scientific experimental basis for the further research on polysaccharides in the Polygonum hydropiper L.

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110 | Comparative study of two blocking methods for interventional treatment of dangerous placenta previa

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Objectives: Placenta previa refers to the place where the placenta adheres to the lower edge of the uterus and the lower segment of the uterus covers or reaches the uterine ostium after 28 weeks of pregnancy, which is lower than the exposed part of the fetus and is the main inducement for vaginal bleeding symptoms in the third trimester of pregnancy. Dangerous placenta previa refers to the pregnant woman who had a previous history of cesarean section.

Methods: 48 dangerous placenta previa pregnant and lying-in women admitted to our hospital from March 2016 to October 2017 were taken as the main objects of this clinical observation and experimental study. The pregnant and lying-in women were divided into two groups in the order of

seeking medical treatment, with 24 cases in each group. The study group adopted the preset balloon occlusion route of the lower abdominal aorta, while the routine group adopted the arterial embolization route of the lateral uterine site. The effects of the two groups were analyzed.

Results: After comparing and analyzing the scores of various indexes of pregnant and lying-in women in the two groups, we know that compared with the conventional group, the clinical indexes of the study group, the clinical indexes of maternal and infant outcomes, and the occurrence indexes of complications all have prominent scoring advantages, and the analysis difference of comparative data between the two groups has statistical analysis of basic significance, $x^2 = 1.209$, $P < 0.05$.

Conclusions: After comparing and analyzing the actual application of the two different blocking methods of the dangerous placenta previa interventional therapy, i.e. the preset balloon blocking path of the lower abdominal aorta and the arterial embolization path of the lateral uterine part, the comparison and analysis results of the above clinical data can prove that for the vast number of pregnant women receiving the dangerous placenta previa interventional therapy, Using preset balloon occlusion path of lower abdominal aorta has feasibility value and significance in clinical application.

111 | Application value of the high-quality nursing model in the cardiovascular medical nursing

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Objectives: The cardiovascular disease is one of the diseases with a high incidence among the middle-aged and the elderly people in China. It has a direct impact on the health and the quality of life of patients. Compared with the conventional nursing mode, the high-quality nursing care pays more attention to patients' needs, which is very important for improving patients' satisfaction rate in our nursing. Relevant medical institutions must pay more attention to it. According to the differences of the nursing modes, they were divided into two groups: the control group with the general nursing mode and the experimental group with the high-quality nursing mode. It was found that the high-quality nursing mode in the cardiovascular internal medical nursing could significantly improve the nursing quality, improve patients' bad mood, and have important significance for building a harmonious relationship between nurses and patients.

Methods: 143 patients treated in the cardiovascular medicine were divided into the control group (71 cases) and the

experimental group (72 cases) according to the difference of the nursing mode. The control group received the general nursing mode, while the experimental group received the high-quality nursing mode. The effect of the nursing intervention was compared between the two groups.

Results: After the nursing intervention, the anxiety score of the control group was (36.28 ± 3.97), and the depression score was (36.87 ± 4.35), while the anxiety score of the experimental group was (23.21 ± 4.64) and the depression score was (23.02 ± 3.86). After the nursing intervention, the scores of anxiety and depression in the experimental group were lower than those in the control group, and the differences have the statistical significances ($P < 0.05$). Of the 71 patients in the control group, 23 were satisfied with the nursing work, and 36 were generally satisfied, while 12 were unsatisfied, and the satisfaction rate was 83.10%. Of the 72 patients in the experimental group, 41 were satisfied with the nursing work, and 28 were generally satisfied, and 3 were unsatisfied, and the satisfaction rate was 95.83%. The satisfaction rate in the experimental group was higher than that in the control group, and the difference has statistical significance ($P < 0.05$).

Conclusions: The high-quality nursing mode in the cardiovascular internal medical nursing can significantly improve the quality of the nursing, improve patients' bad mood, and have the important significance for building a harmonious relationship between nurses and patients.

112 | Research on the construction of the gene regulatory network based on the hybrid parallel genetic algorithms

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Objectives: How to get better performances is an important topic in the research of the genetic algorithm. At present, many parallel genetic algorithms have done a lot of work for this purpose. The traditional parallel genetic algorithms mainly use the idea of the distributed parallel computing, while the grid computing has the advantages of flexibility and small investment compared with the distributed parallel computing. The model described in this paper can collect free computing resources on the network for the parallel genetic algorithm computation, which is a good choice. At the same time, how to find the optimal parallel strategies and population partitioning strategies for specific problems is a problem to be solved.

Methods: The BNT (Bayesian network toolbox) Structure Learning Package based on MATLAB is used in the network

construction experiment. The software package is an extension of the BNT toolbox developed by Murphy, et al. in the static network structure learning.

Results: In order to quantitatively evaluate the authenticity of the reconstructed network, sensitivity and specificity are mentioned as two indicators. Sensitivity correctly estimated the edge number/all edges in the target network, which refers to the proportion of the control relationship correctly found by the algorithm in the actual control relationship in the network. Specificity correctly estimated the edge number/all estimated edges number, which refers to the proportion of the correct prediction in the total number of the regulatory relationships in the prediction of the algorithm.

Conclusions: The theory and the application of the gene regulation have achieved many important results, but with the deepening of the researches, more and more problems and challenges are faced. The SEM algorithm is very suitable for constructing the gene regulatory network from the microarray gene data because of its advantages in processing the missing values or the partial observable data. In this paper, an improved SEM algorithm is proposed. By initializing the data, the best initial values are selected from the candidate initial parameters, and then, the SEM algorithm is executed to better construct the gene regulatory network. Experiments show that the proposed method is more effective, and the result network is closer to the optimal one after comparing with the data.

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113 | Research on the service mode of artificial intelligence for the aged in the age of big data

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Objectives: With the aging of the social development situation is increasingly urgent, the number of the elderly population continues to grow, the elderly living alone in empty nest have nothing to rely on, the supporting infrastructure for the aged is still in an imperfect state, the problem of the aged is becoming increasingly serious, and the aged service industry has gradually become a sunrise type of development industry in today's society.

Methods: It searches domestic and foreign research reports, academic papers, books, magazines, collected articles and so on related to artificial intelligence science and technology and the professional model of old-age service under the background of big data development era, systematically sorts out and summarizes and analyzes relevant research results such

as artificial intelligence science and technology, professional model of old-age service, practical application of artificial intelligence in the professional model of old-age service, social old-age service and so on, so as to provide valuable reference or basis for effective application research of artificial intelligence science and technology in the professional model of old-age service under the background of big data development era.

Results: An intelligent service model for the aged built by artificial intelligent robots developed under the background of the information age with big data has various application advantages. It can not only provide idealized special medical care service and sustained special life care service for the majority of the elderly, but also provide rich emotional experience and unblocked emergency assistance for the majority of the elderly. It will eventually become the best selling model for the aged service in the future.

Conclusions: For the core industry of domestic pension services, if you want to keep pace with the times and continuously improve and optimize the special model of pension services, you should focus on an intelligent service model for the elderly built by artificial intelligent robots developed under the background of big data as the information age. Combining with the actual needs of the elderly for pension services, you should effectively use big data and artificial intelligent science and technology, continuously innovate and optimize the intelligent service model for the elderly, and provide the most intelligent, intelligent, convenient and one-stop pension services for the majority of the elderly.

114 | Study on the effect of the microbial delivery method on improving the hydrological environment

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Objectives: With the development of the industry and the rapid growth of the population, the environment on which human beings depend is polluted more and more seriously. The pollution of the water resources is the most harmful, the most extensive and the most diverse, including the domestic sewage, the factory organic wastewater and the toxic and harmful sewage and so on. These pollutants exceed the self-purification capacity of the water bodies. In order to protect

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the environment and save the water resources, the domestic sewage must be treated.

Methods: The microbial processing and delivery system designed in this paper includes the data acquisition module, the central processing unit, the delivery execution module and the wireless transmission module.

Results: As a preferred technological scheme, the microbial species include, but are not limited to, the spores and pseudomonas. In the above embodiment of the application, by providing a microbial processing and delivery system of the hydrological environment, including the data acquisition module, the central processing unit, the delivery execution module and the wireless transmission module, the data acquisition module includes the water quality data acquisition unit and the hydrological data acquisition unit, and the data acquisition module passes the collected water quality and the hydrological data. The wireless transmission module is transmitted to the central processing unit, which analyses and judges the received data. The delivery execution module carries out the optimal delivery scheme selected by the central processing unit and carries out the quantitative drug extraction, the residual monitoring, the dilution activation, the metering delivery and the online cleaning. The system saves the human resources to the greatest extent, improves the accuracy of the microbial delivery, and realizes the comprehensive solution of the unattended microbial treatment of the hydrological environment.

Conclusions: With the development of the industry and the rapid growth of the population, the environment on which human beings depend is polluted more and more seriously. The pollution of the water resources is the most harmful, the most extensive and the most diverse, including the domestic sewage, the factory organic wastewater, and the toxic and harmful sewage. These pollutants exceed the self-purification capacity of the water bodies. In order to protect the environment and save water resources, the domestic sewage and the industrial wastewater must be treated and meet certain standards before they can be discharged into the natural water or reused.

115 | Research on the problems and countermeasures of the internal control in pharmaceutical enterprises

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Objectives: With the deepening of the trend of the global economic integration, the market competition among enterprises is gradually intensifying. How to build the enterprise advantages and improve the market competitiveness of enterprises has become a pressing issue for the development of enterprises nowadays. As an important industry related to the national economy and people's livelihood, the financial internal control of pharmaceutical enterprises is more important. In view of this, this paper studies the problems and countermeasures of the internal control in pharmaceutical enterprises, aiming at further improving the level of the internal control in pharmaceutical enterprises.

Methods: Only when the awareness of the risk management and control of pharmaceutical enterprises has been improved can it provide effective guarantee for the development of the internal control work fundamentally. It needs to be clear that the internal control work is the work that every enterprise employee should participate in, not just the work of the specific personnel. In addition, if necessary, pharmaceutical enterprises should also integrate the risk control awareness into the corporate cultures, in order to further enhance the risk control awareness of all employees. Therefore, in order to better guarantee the efficient development of the internal control in the hospital enterprises, firstly, enterprises should change their attitudes, recognize the necessity of building and implementing the supervision system, and then set a good example for the employees of the enterprises at the ideological level. Therefore, before every major decision-making of enterprises, the person in charge of the internal control process should strictly control the internal control process, and control the market environment.

Results: The financial accounting internal control is the key of the enterprise internal management control, and also the core of the enterprise management. Pharmaceutical enterprises are related to people's livelihood. Their financial internal control level not only directly affects the survival and development of enterprises, but also affects the national economy and people's livelihood to a certain extent. Therefore, for pharmaceutical enterprises, the effective financial internal control can not only provide a strong guarantee for the normal operation of enterprises, but can also improve the competitiveness of enterprises in the market and promote the healthy development of enterprises.

Conclusions: Based on the analysis of the main contents and the influencing factors of the internal control in pharmaceutical enterprises, the main problems of the internal control in pharmaceutical enterprises are analyzed, and the corresponding solutions are put forward in order to effectively solve the main problems faced by pharmaceutical enterprises in the internal control, and then promote the healthy development of pharmaceutical enterprises.

116 | Research on the situational language teaching of chinese vocabularies with the aid of the multimedia network

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Objectives: The aim of the Chinese vocabulary teaching is to enable students to grasp the rules of the Chinese vocabulary and language and carry out the vocabulary teaching. Therefore, we should further explore a variety of the teaching methods and ideas, and practically exercise and improve students' abilities to teach Chinese vocabularies. To teach the vocabularies well, students need not only the solid knowledge of the Chinese vocabularies and the rich vocabulary teaching practice, but they should also have the overall grasp of the basic linguistic theory, as well as the Chinese pronunciation, vocabulary, Chinese characters, grammar and cultures. Only in this way can we really teach the vocabulary well and establish the vocabulary sensitivity. With the help of the multimedia network, we can use the appropriate methods in our teaching and explain profound theories in simple languages. The situational language method can concretize and visualize the abstract knowledge, and at the same time, it can increase the interest of our learning.

Methods: The value function of the computer multimedia assisted instruction. Problems to be noticed in the multimedia assisted instruction. The theoretical basis of the situational language teaching method. Situational language teaching model of the Chinese vocabularies assisted by the multimedia network.

Results: For the vocabulary teaching, emphasis is laid on explaining the difficult and the important vocabularies and the vocabularies easy to read and write wrongly. For the vocabularies difficult for students to understand, the context teaching should be used reasonably. For the vocabulary itself, it is not difficult for students to understand the meaning of a word itself, but it is difficult for them to grasp the position of each word in a sentence and the relationship and usage between words. Therefore, teachers must grasp the key points in the vocabulary teaching and pay attention to the practical results.

Conclusions: The information technology provides teachers with a huge resource pool, making it easier for teachers to access the teaching resources, but it also puts forward higher requirements for teachers' abilities to screen the effective teaching information. In our teaching, attention should be paid to the appropriate amount of the teaching information, and the important points should be prominent, and the order and the strategy of presenting the information should also be scientific and reasonable.

117 | Research on the development of music education system under the background of computer multimedia technology

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Objectives: In recent years, music education in China has made gratifying achievements and great development. However, we must clearly see that there are still some outstanding difficulties and problems in the music education in our country, such as the lack of comprehensive and correct understandings, the unsystematic music knowledge of students and the weak music teachers and so on. We must attach great importance to them. Music education, as an important part of the art education, is also an important part of the aesthetic education. It is of great significance for the implementation of the quality education in an all-round way. Under the background of the computer multimedia technology, the development of the music education system provides an effective means of learning and testing for the implementation of the music teaching, which has certain significance in promoting the development of the music education informatization.

Methods: The concept and characteristics of the computer multimedia technology. The concept of the computer multimedia technology. Characteristics of the computer multimedia technology. The connotation of the computer multimedia teaching. Simple material and simple evaluation: a lack of the current music teaching activities. Relatively single teaching material and imperfect teaching objectives. The teaching method is not scientific enough and the teaching evaluation is too simple. The development background of the music education system under the background of the computer multimedia technology. Development and analysis of the music education system under the background of the computer multimedia technology.

Results: Education big data collection: Students, teachers, managers, parents, learning platforms, campus websites, educational equipment and other people and things produce the sensor data and the network data in the process of the teaching and learning. The big data of education are collected by means of the database, the network data and the document collection. Database acquisition: The traditional relational

databases such as MySQL and Oracle store the data. Sqoop, ETL, Talend, HDFS and mainstream Nosq databases realize the data synchronization and integration. The network data acquisition: The network data are extracted and stored as the local data files by means of the network crawler and API. File acquisition: The flume collects and processes the real-time files, and ELK collects and processes the logs.

Conclusions: To sum up, in order to implement the music education, we must first fully understand the particularity of the music itself. Only by mastering the characteristics, essence and rules of the discipline can we organically shape and cultivate people by utilizing the resource advantages of the discipline. At the same time, on this basis, combined with China's personnel training objectives, take into account the training of the qualified personnel. In this way, the music education can play a constructive role in the system of training the qualified personnel and fully realize its own value.

118 | Design and implementation of interactive english grammar learning system based on android platform

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Objectives: In order to improve the English teaching model, multiple regression analysis was applied. The present situation of college English classroom teaching model was investigated by using the method of questionnaire. The teaching form of college English class was conservative. The relationship between teachers and students was not harmonious. The teaching method was not flexible enough. The evaluation of teaching was not reasonable.

Methods: A hierarchical and mixed teaching model was constructed. For English majors and non-English majors, this model proposed the classification standards for professional and general courses. An interview was made among teachers to analyze the current situation of college classroom teaching mode. Surveys on teaching model were conducted. The teaching method, the discussion of teaching method, the experimental teaching method and the self-study method are investigated.

Results: Through the performance of students in normal classroom, as well as the knowledge preparation and performance in Academic Salon and debate, teachers give students an objective and fair score. Through the "student satisfaction survey," teachers assess the students' recognition, so as to reflect on the teaching and further improve or innovate the

teaching mode. With regard to teaching evaluation, students need to evaluate two teachers at the same time. One is the teacher in the long-distance classroom, and another is the instructor of the real class. The course is evaluated for satisfaction, which can be achieved through an online platform. It can provide feedback and encouragement for teachers to make them more attentively and deeply in the course of teaching, in order to better serve the teaching. The evaluation of students' learning is realized mainly through the form of "normal test + ordinary homework + class performance + final homework". The score of "normal test + regular homework + classroom performance" can't exceed 50% of the total score. The end of term homework should not be less than 50% of the total score.

Conclusions: At present, the classroom teaching mode of colleges and universities is still limited to the field class. It is mainly lecture-styled classroom teaching mode. In recent years, with the development of MOOCs, this traditional classroom teaching model cannot meet the needs of the times and the development of colleges and universities. Therefore, it is necessary to build a new teaching model. The theory of teaching is rich. It provides theoretical guidance for teaching practice, promotes the development of teachers and students, and improves the quality of teaching. Under the guidance of the background and theory of MOOCs, questionnaire and interview are used. The current situation of college English classroom teaching model is studied and analyzed rationally. On this basis, the structure model of the hierarchical mixed teaching model is put forward.

119 | Study of establishing cultural comparison courses for english majors in ethnic colleges and universities in combination with regional characteristics

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Objectives: Today, with the maturity and development of the ethnic construction, English majors in ethnic colleges and universities, as the role of supporting local social and economic development, should define their own functional orientation of development and form their own school-running characteristics so as to make their due contributions to the social development and competition. Therefore, in today's university teaching activities that are innovative in an all-round way, integrating the cultural reality and regional characteristics of minority areas, enriching the professional settings and optimizing the curriculum teaching will truly achieve the best effect of the curriculum teaching.

Methods: Analysis of the particularity of the English major teaching activities in ethnic colleges and universities. Value

analysis of establishing the cultural comparison courses for English majors in ethnic colleges and universities in combination with the regional characteristics. Strategies for establishing the cultural comparison courses for English majors in ethnic colleges and universities in combination with the regional characteristics. The foundation of establishing the course of cultural comparison lies in the standardized utilization of resources. The key to the establishment of the cultural comparison course lies in the integration of the national cultural resources. The key point of setting up the cultural comparison course is to renew the educational concept.

Results: The increasing trends of the internationalization and the new social situations have put forward new requirements for the ability and accomplishment of our college students. In the traditional curriculum, the cultural comparison course has always been a compulsory cultural course for English majors. From the perspective of the foreign language learning, the most important thing to learn a foreign language well is to understand its national way of thinking, values, customs and habits, so as to achieve a fundamental mastery of its language.

Conclusions: With the acceleration of the internationalization of the higher education in China, a larger number of the courses related to the English majors in ethnic colleges and universities have begun to set up the cultural comparison courses. Students can not only learn the basic knowledge of politics, economy, cultural traditions, religious customs and other western countries in English, and expand their knowledge, but more importantly they can also effectively promote and improve their national knowledge learning and achieve the purpose of "learning for application" by using a wide range of the knowledge reserves and an open international perspective.

120 | On the application of the situational teaching method in the teaching of english language and literature

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Objectives: In English majors, English language and literature is a very important part, which is conducive to strengthening students' ability to use English. Nowadays, with the continuous change of the educational methods and the teaching concepts, the demand for education has been constantly changing. Teachers want to improve their teaching efficiency, and they need to constantly adjust the teaching activities and methods. In order to meet the needs of the current students in learning the English language and literature, the application of the situational teaching method in the teaching is helpful to improve students' self-learning awareness, and strengthen students' ability to analyze problems and solve problems. Therefore, this paper makes an analysis of the effective application of the situational teaching method in the teaching of English language and literature.

Methods: Application strategies of the situational teaching method in the English language and literature teaching. Creating the reasonable situations for the English language and literature teaching. Constructing a good teaching environment for English language and literature. Reasonable design of the teaching situations in the stage of the joint learning. Using teaching tools to set up the teaching situations reasonably. Cooperative learning constructs the reading situations of the English language and literature.

Results: In addition, the teachers can also let each group choose a student representative to interpret the key and difficult points of the paragraph in charge, so as to assess and test the learning effect of the group. After the student representative speaks, other students can actively supplement. In the communication and discussion of each group, students can gradually understand the contents of the passage, and accurately grasp the key and difficult contents of the article. After students' supplementary summary, teachers can make the appropriate comments or supplements according to the situations, and guide students to accurately grasp the central idea of the article. This can not only improve students' interests in learning, but also save students' time to understand the texts.

Conclusions: Whether teachers can reasonably construct the teaching situations is directly related to the teaching effect of the English language and literature. Therefore, in order to improve the teaching efficiency of the English language and literature, teachers should fully understand the students' learning foundation, interests and abilities before class, and then create the reasonable teaching situations according to the contents of the class through various forms, so as to create a corresponding learning atmosphere for students, stimulate students' learning enthusiasms, enhance students' interests in learning, and then promote students to grow into the high-quality English talents that can meet the demands of our society.

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121 | Research on the competency model of college foreign language teachers based on the virtual reality technology

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Objectives: The virtual reality technology is a computer simulation system that can create and experience the virtual world. It uses computers to generate a simulation environment. It is a system simulation of the multi-source information fusion, the interactive three-dimensional dynamic scenes and entity behaviors, which immerses the users in the environment. The competency of the university teachers, also known as the competency characteristics of university teachers, refers to the potential and deep-seated characteristics of individuals who can distinguish the outstanding achievers from the average performers in the positions of university teachers, including motivation, traits, self-image, attitude or values, knowledge, cognition and behavioral skills in a certain field – any of the individual characteristics that can be reliably measured or counted and can distinguish the outstanding performances from the general performances.

Methods: Definition of the foreign language teachers in colleges and universities. Determining the sampling strategies and the criteria. Pre-interview and Dictionary of Competence Coding for College Foreign Language Teachers. Implementing the behavior event interview. Interview recording transcribed into texts. Competency feature coding. Data processing.

Results: The basic indicators of the statistics are mainly the frequency of the competency characteristics, the average grade score level, the total score of the competency characteristics and the highest grade score. Then, the four indicators of frequency, the average grade score, the total score of the competency characteristics and the highest grade score are validated, and the differences between the excellent group and the ordinary group are compared and analyzed. The SPSS13.0 statistical software is used for the data processing.

Conclusions: The competency model of the foreign language teachers in colleges and universities is constructed based on the test results and the cluster analysis results of the differences between the frequency of the competency characteristics, the score level of the average grades, the total score of the competency characteristics and the highest grade score between the excellent group and the ordinary group. On this basis, we collect and sort out the key behaviors of the teachers in the interview texts, list the behavioral indicators of each feature, improve the coding dictionary, and finally form the competency model of the foreign language teachers in colleges and universities.

122 | Military text translation based on the narrative theory and its enlightenment

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Objectives: In the past few years, science and technology have made rapid progress, and countries have continuously strengthened cooperation and exchanges in the military field. At the same time, many military English documents have emerged. In order to strengthen the informationization construction of our army and obtain the military information from other countries, the demand for the English translation of the military texts is also increasing day by day. The military text English has its own stylistic features. When translating the military texts into the discourse, attention should be paid to the stylistic features of the military texts. The corresponding Chinese military language expressions should be adopted to express them accurately. Translation is not "building bridges" or "eliminating barriers" as many people think, but the active dissemination and promotion of the narration. This paper tries to apply the narrative theory to the practice of the military translation, analyses four main strategies of constructing the military translation texts, and puts forward some meaningful suggestions for the teaching of the military translation.

Methods: Translation principles of the military English, precise word meaning, concise form, using standards.

Results: When we interpret the narration, we usually place the narration in a related system. The causal plot setting is also an inherent feature of the narration, because only by clarifying the cause of events can we thoroughly understand the context of the narration, which can help us understand, and then adopt the appropriate attitude to deal with it.

Conclusions: In the late 1960s, narratology was separated from rhetoric, literary criticism and other disciplines, and became an independent discipline, mainly used to appreciate the structures and expressions of the literary works. By the end of the 20th century, the post-classical narratology emerged and developed rapidly, expanding the field of the narrative research to various media and genres, involving all aspects of life. Mona Baker's translation narrative theory belongs to the post-classical narratology. Therefore, it is of great practical significance to apply this theory to the translation practice of the military texts and to explore the roles of the translation in participating in and promoting the narrative and discourse communication.

Interactive English learning system based on Android platform is designed and developed. It initially analysed the way to realize the technology supported teaching in mobile environment and made a positive exploration in the theory and practice of the application of information technology in education.

123 | The design and implementation of interactive english grammar learning system based on android

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Objectives: According to the actual situation of the development of education informatization at home and abroad, Chinese scholars clearly put forward the view that information technology should combine education and teaching to achieve structural transformation of school education system. Through the integration of information technology and curriculum, the reform of the classroom teaching structure is carried out to promote the development of the application of information technology in education. Combining information technology and teaching practice, we set up a new teaching and learning mode, which can fully play the leading role of teachers and highlight the dominant position of learners.

Methods: The overall structure of the system. In accordance with the design management methods and structural design requirements of the incremental software engineering model, the system is organized from three levels. System function design.

Results: As the focus of development and design, a non-registered user communication module is designed on the lecture platform the systems. The user interaction module for registered users in the question and answer platform is also designed, which provides an effective communication platform for learners and teachers, and realizes the interoperability of software design.

Conclusions: In this paper, English grammar teaching activity is set as the research object. It mainly delved into the traditional classroom teaching elements. The thesis established is about the practice of mobile-based learning theory.

124 | Current situations and countermeasures of english translation teaching in colleges and universities

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Objectives: Translation is the use of another language to express the meaning of a language. Knowing some words in the process of the translation and understanding a passage does not mean having the ability to translate the source language into a qualified target language.

Methods: Increasing the setting of the translation class hours, rational selection of the textbooks, innovation of the English teaching models, improving the professional qualities of teachers, and fully understanding the linguistic and cultural background differences between Chinese and western cultures.

Results: The process of translation is a process of recreation, in which the original text is reproduced creatively in another language on the basis of understanding the original text. It includes understanding and expression. The problem often arises in students' translation practice. The process of translation is a process of recreation. On the basis of understanding the original text, it is the process of the creative use of another language to reproduce the original text. It includes two basic links of understanding and expression.

Conclusions: For the college English translation, students should not only have the corresponding grammatical basis, but should also have enough vocabularies. Only in this way can they complete the English translation well. This is not only related to students' learning of the English knowledge, but also to a series of the situations that students will face in their future employment. Therefore, to do a good job in the college English translation teaching, we must have a set of

the brand-new education model only focusing on the college students, so that we guide students correctly, thus promoting students' learning ability and ultimately improving the teaching quality of the college English translation.

125 | The impact of network environment on ancient chinese literature teaching and countermeasures

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Objectives: More academic experts and researchers have joined the research team on the topic of teaching impact and countermeasures of ancient Chinese literature under the background of network environment, in order to effectively break through the imprisonment of traditional teaching ideas and methods and create a new network teaching environment. This article also takes this as the subject to carry on thorough research, in order to explore the best teaching method or path for the ancient literature specialty in our country.

Methods: (1) Literature retrieval methods. Firstly, it searches the research reports, academic papers, books, magazines, collected articles and so on related to the teaching impact and countermeasures of ancient Chinese literature under the background of the language network environment at home and abroad, and systematically sorts out and summarizes and analyzes the related research results such as the teaching impact and countermeasures of ancient Chinese literature under the background of the language network environment, so as to provide valuable reference or basis for the effective application research of the teaching impact and countermeasures of ancient Chinese literature under the background of the network environment. (2) Interdisciplinary research methods. In order to further study the impact on the teaching of ancient Chinese literature in the context of the language network environment and a series of countermeasures, and to have a thorough and comprehensive understanding of the actual evaluation methods of the expected results of the teaching of ancient Chinese literature and their applications. (3) Field research methods. The research of this topic spans the Internet, information technology, ancient literature and other fields. It needs to apply various disciplinary methods, basic theories and achievements, and comprehensively study this topic from the overall perspective to ensure the objectivity and accuracy of the research of this topic.

Results: The impact of the network environment on the teaching of ancient Chinese literature is mainly manifested in the role and function of traditional teachers, teaching contents and modes. In order to better cope with the impact of teaching, we can start from reshaping the role of teachers, paying attention to the integration of network resources, devoting ourselves to the development of new curriculum resources, constructing teaching innovation modes, etc., so as to make full use of the advantages of the network environment, break through the traditional teaching cage, create a network teaching environment in a substantial sense, and promote the overall teaching professional level of ancient Chinese literature.

Conclusions: Under the background of the network environment, the teaching of ancient Chinese literature is greatly impacted. Teachers should have a sense of urgency to actively change the previous teaching mode, be good at using the advantages of the network environment, create a high-quality network teaching environment for the majority of students, stimulate students' learning potential, actively participate in various learning activities, and facilitate the improvement of the teaching quality of ancient Chinese literature.

126 | The impact of nonverbal communication on young learners' English development: a case study of two Chinese-English bilingual children

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Objectives: Much scholarship on nonverbal communication (NVC) has focused on children's growth and development (Karimi, Dabaghi & Tabatabaei, 2012). Many of these studies, however, adopt the survey to conduct their study. This study explored how nonverbal communication effects the development of language learning of two Chinese-English bilingual children in the Philippines, employing case study approach to observe the participants, which lasted 4 months. The findings of the study revealed that NVC can improve L2 learners' vocabulary study, and motivate them to open the gate to active learning; NVC can help L2 learners' intercultural communication, assisting them in expressing their intentions; NVC can help to build a good relationship between teacher-student relationships. In view of the results, it is obvious that nonverbal communication plays an important role in the development of bilingualism. It is strongly recommended that we should pay more attention on nonverbal communication in children's bilingual development in a multilingual setting.

Methods: The Role of NVC in Vocabulary Learning. The Impact of NVC on English Communication Skills. The Function of NVC in Teacher-student Relationship.

Results: The present research also finds that NVC plays an important role in teacher-student relationship. Just as Houser and Frymier (2009) found that teachers' effective nonverbal communication can improve pupils' sense of confidence in the subject area; Conversely, teachers' poor nonverbal communication can lead to pupils' hesitation about the subject area. Zekia (2009) came to a conclusion that teacher's non-verbal communication creates a comfortable and relaxing atmosphere for learners, which can enable learners to have self-confidence which also leads to an increase in the participation and contributions to the lesson.

Conclusions: The study emphasizes the qualitative research which enables a deep insight into the kids' learning process. This study investigated the case of two Chinese-English bilingual children living in the Philippines, representing an attempt to make contributions to a better understanding of intercultural nonverbal communication. Based on the data, the study has the following conclusions: Firstly, NVC can improve L2 learners' vocabulary study, and motivate them to open the gate to active learning. Secondly, NVC can help L2 learners' intercultural communication, assisting them in expressing their intentions. Thirdly, NVC can help to build a good relationship between teacher-student relationships.

127 | Study of the role of english language and literature in developing students' language ability

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Objectives: English language and literature is the study of the foreign literature. Through the teaching activities, students can not only learn more about foreign cultures, but can also help to cultivate and improve their language ability. Therefore, it is necessary for teachers to actively carry out the English language and literature teaching. However, in the actual teaching activities, some teachers fail to attach importance to the positive role of the teaching, and then develop in the teaching activities, and the teaching effect is not good, and it is difficult to give full play to the positive role. Therefore, it is necessary for the relevant departments to take effective measures to not only enhance English teachers' attention to the language and literature, but also improve the teaching efficiency.

Methods: Training students in stages. Help to improve the overall quality of students. Strategies for developing students' language ability by learning English language and literature.

Read a lot to improve the sense of the language. Make clear the goal of students' learning English literature. The functions and methods of developing students' language ability.

Results: According to the actual contents of the English language and literature, we should strengthen the teaching management, constantly improve the level of the English language teaching and expand the standard of ability. Teachers should attach importance to the analysis of the English language application teaching, cultivate students' good language communication, strengthen the application and practical operation of our English teaching, and provide students with good judgment of their English ability. According to the specific contents of the English language learning, this paper reasonably analyses the actual English teaching process, continuously improves students' English language expression, strengthens the overall language understanding levels. Teachers need to strengthen the analysis of the language and literature, judge students' actual needs and teaching standards, and we should not be divorced from the actual process of our teaching, but need to constantly improve the cultivation of the language and literature ability.

Conclusions: According to the English language learning, we should strengthen the teaching of the extracurricular reading, analyze the teaching process of the English language learning, and accurately judge the ideal effect of our actual teaching. Based on the analysis of the actual teaching characteristics, this paper pays attention to the teaching ideas and methods of the extracurricular reading. Teachers need to guide students effectively, encourage students to strengthen the effective reading in the extra-curricular practice, strengthen the analysis of the English works, expand their knowledge levels, cultivate their good English language learning abilities, strengthen the comprehensive English expression analysis and skill judgment, combine the practical application, improve researches on the comprehensive skills, expand the analysis and the effect judgment of the language communication, continuously improve students' language abilities, improve the development level of the English learning ability, and lay a solid foundation for students' English learning.

128 | A study on the subjectivity of translators in C-E translation of the chinese political documents from the perspective of adaptation theory

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Objectives: From the perspective of eh translator's subjectivity, there are many differences between the two English versions. The common feature of the translator's

subjectivity is the subjectivity, that is, the translator's conscious action. Different cultural identities, backgrounds and purposes have an impact on the translator's conscious action. Translation, as a form of the linguistic communication, generally involves the process of understanding the source text, expressing it in the target language, and checking and revising the translation. Therefore, from the perspective of the adaptation theory, translation is also a process of the continuous selection, from the choice of the types of the translation to the choice of the lexical, syntactic and textual levels.

Methods: Analysis of the particularity of the English translation of Chinese political texts. English translation requirements of Chinese political texts from the perspective of the adaptation theory. The application of the adaptation theory to the Chinese-English translation of Chinese political texts. Translation is a process of the continuous selection. Adaptation of the contextual factors and the translation activities. Adaptation in the language structure selection and the translation activities. The awareness highlighting and the translation activities in the process of the adaptation.

Results: From the perspective of the translator's subjectivity, translators have great subjective initiatives in their translation, but cannot get rid of the restrictions of their ideology, cultures and many other factors. If translators' initiatives and passivity can be combined into the translation of the legislative texts, it will help us to understand the translation more deeply and further improve the quality of our translation. The pragmatic translation is inseparable from the translator's psychological awareness.

Conclusions: In the process of the meaning generation, the translator should make clear whether the translator's awareness of the language choice and adaptation is consistent with that of the original author and the target readers. If they are consistent, then the translation conforms to the three-dimensional relationship in the translation: the author of the original text, the translator, the reader of the translated text and their ideology.

129 | Research on the influence mechanism of big data on enterprise management decision

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Objectives: The big data contains much more data than the contents of the current typical database management system, which obviously occupies an advantage in the acquisition, storage and analysis capabilities. The application of the big data in the enterprise management decision-making can effectively change the decision-making environment, data, participants and organizations of enterprises, and has a great impact on the traditional decision-making methods of enterprises.

Methods: Summary of the big data concepts and characteristics. Concept of the big data. Characteristics of the big data. The important impact of the big data on the enterprise management decisions. Impact on the decision-making environment. Impact on the decision-making data. Impact on the decision-making participants. Impact on the decision-making organizations. Analysis of the impact of the big data on the decision-making culture. Mechanism using the big data to develop the enterprise management decision-making. Grasp the management of the software and the hardware. Development and management of the human resources. Challenges faced by the enterprises in the era of the big data. Ensuring the information security in the application of the big data in enterprises. Making use of the advantages of the big data to make scientific decisions.

Results: At present, most enterprises' analysis of their own business development is still one-sided at the primary level of the data and information aggregation. Because of the lack of the in-depth research on the customer consumption habits, marketing means, competitors and other data, business managers who rely solely on their personal experience and intuition in their decision-making may directly lead to misjudgment of the situation, decision-making errors, and even business failure. However, if managers make decisions based on their objective and scientific analysis of the data, it will be helpful for enterprises to control risks. How to use the big data to assist the decision-making is also a difficult problem that the business managers must pay attention to and think deeply.

Conclusions: The influence of the big data background on the enterprise management decision-making is not only an application of the data processing method, but also a new means to help the future development of enterprises. The efficient use of the big data contents can not only help enterprises to

push through the old and bring forth the new and keep pace with the times, but also enable enterprises to remain invincible in the fierce market competition environment, overcome opponents, improve themselves, and make the future of the enterprises more brilliant.

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130 | Design and application of the foreign language electronic teaching diaries based on the virtual reality technology

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Objectives: In our country's foreign language teaching, the foreign language teaching diary has not been widely used. With the gradual development of the science and technology in China and the rapid popularization of the multimedia, a management tool called Electronic Learning (Chinese translation for e-learning) has also been widely used in our foreign language teaching in China. This management tool, combined with the diary research, is very useful in the self-reflection of the foreign language teachers. In this paper, a foreign language teaching diary written by the foreign language teachers under the support of the Electronic Learning is called a foreign language electronic teaching diary.

Methods: The application background of the foreign language electronic teaching diary. Overview of the virtual reality technology. Application of the virtual reality technology in the electronic teaching. Virtual teaching and virtual experiments. Virtual simulation campus. Design of the foreign language electronic teaching diary based on the virtual reality technology. Application strategy of the foreign language electronic teaching diary based on the virtual reality technology.

Results: In the immersive learning, learners learn the language through the interaction with the surrounding world, and their autonomy in learning is greatly developed, and the autonomous learning is widely advocated. The language acquisition is a process of self-restraint. Through the autonomous learning, foreign language teaching has shifted from the teacher-centered to the student-centered. In this study, we systematically and thoroughly analyze the collected data (e-teaching diaries of foreign languages) using the grounded theory, and then summarize the characteristics of writing the foreign language teaching diaries. The advantage of the grounded theory and method lies in its openness. That is, it can truly reflect its theoretical and practical significance according to the data obtained.

Conclusions: With the rapid development of China's social economy, the social background has gradually become globalized and diversified. If we want to keep up with the pace of the global economic development, we need to improve the overall quality of the masses. First of all, we should improve the level of their foreign language, and the foreign language teachers are the core force. The teaching diary is a way for teachers to reflect the teaching contents in writing. It is also a key raw data carrier for teachers to reflect on their teaching. It is also one of the most effective ways for teachers to better understand themselves, analyze the advantages and disadvantages of their teaching and promote their professional development in the future.

131 | Research on the reorientation of teachers' and students' role in grafting college English teaching under MOOC and information technology on WeChat platform

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Objectives: Based on MOOC and information technology, the role of English teachers and learners have changed in College English teaching on WeChat platform. Teaching should match online and offline hybrid teaching and realize "flipped classroom" in teaching practice. This paper probes into the realistic background and theoretical basis of the role transformation of teachers and students in English teaching, and on this basis analyzes the requirements of the role transformation for teachers and students in mixed English teaching. It is proposed that the communicative interaction should be used to help students formulate College English learning objectives, specific measures and evaluation methods, so as to standardize students' online and offline mixed learning behavior.

Methods: By elaborating on the realistic background of the role change of teachers and students, the theoretical basis of the role change of teachers and students, teaching design oriented by WeChat and MOOC and information technology, design of college English online teaching activities as well as the requirements of role transition in mixed English teaching for students.

Results: WeChat and MOOC Orientation have brought a series of new problems to English teachers. Only by properly

solving practical problems can mixed English teaching be carried out smoothly. Therefore, teachers need to master: the application of sound icons; the application of digital movie icons and video animation; media synchronization settings. Specifically, it includes: editing and processing of sound files; inserting sound files; synchronization settings of sound media; converting sound file format when recording; editing and processing sound files and video files; inserting video and animation files; recording video and converting video file format by oneself; drawing knowledge concept maps of each lesson.

Conclusions: Teachers should not only conscientiously design and implement teaching, but also strengthen the guidance and monitoring of students' learning process to prevent students from not learning when they are online. In addition, communicative interaction should help students formulate English learning goals, specific measures and self-assessment methods, so as to standardize students' online and offline mixed learning behavior.

132 | Research on the construction path of the legalized teaching platform for college student management under the internet thinking

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Objectives: The discourse system of the rule of law education in colleges and universities is undergoing transformation in the micro-era, forming the "Internet thinking" suitable for college students' characteristics. The contents disseminated by the Internet platforms such as We-chat, Micro-blog and QQ have distinct network colors and language styles. The so-called "micro-discourse" rule of law education refers to the process of guiding and educating students' awareness of rule of law through the planned, purposeful and organized use of the Internet thinking through the micro-media in the process of the rule of law education activities. Its connotation is based on the intersection of the micro-discourse and the rule of law education, with both participation and innovation.

Methods: Enhancing the legal consciousness of college administrators and college students from the perspective of ideas. Adhere to the principle of equality and clarify the legal relationship between students and universities. Renew the management concepts and establish the student rights relief

system. Adding the network communication channels to realize the fragmentation and living of the communication of the concept of rule of law. Creating the brand of the network platform and increasing the stickiness of the network legal publicity.

Results: Taking the official We-chat platform as the carrier, integrating the ideological and political education functions of counselors, the ideological and political workers, the professional instructors and the Party branches in colleges and universities, actively launching discussions on the hot legal issues, the legal thematic debates, the consultation on professional legal issues, the correction of misperceptions, the supervision of the network public opinions, and striving to focus the attention of teachers and students, so as to increase the cohesion of the legal dissemination. Let the campus legal micro-platform become a window to highlight the spirits and vitality of the legal culture, and let We-chat have the regulation, maintenance, service and image in the legal dissemination. This has a positive significance for universities to build a legal culture and spread their brand influence.

Conclusions: Colleges and universities often have high-quality professional teachers, and the construction of the rule of law culture cannot be separated from their roles and contributions. Teachers of the law specialty are encouraged to set up the real-name micro-blogs, extend the teaching contents to the micro-blog platforms, update and maintain them regularly, publish their teaching experience, teaching reflections and legal cases, and give guidance and answer questions to students. On the other hand, we should cultivate "opinion leaders" among students' micro-blog fans who are active in thinking, have certain Party spirit and are good at communicating. In the process of transmitting the legal news, the legal topics, and discussing the rule of law and carrying out the legal investigation, we should take the lead in expressing our reasonable views and political demands, highlighting the rational spirits, stopping the excessive speech and guiding a healthy and upward atmosphere.

133 | Research on the application of vocal music assistant system based on android technology in class

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Objectives: According to the rapid development of Android system and people's exploration of new teaching methods, this paper puts forward a design of assistant learning system based on Android system exploration, and makes requirement analysis, general design and detailed design. The

advantage of the system is that it can realize the functions such as assignments uploading and downloading, real-time interaction between teachers and students, and teaching resources sharing. With the deepening of quality education, China's vocal music education is also facing new development and challenges. Pushing forward vocal music teaching is one of the important means to develop basic art education in China. Make great efforts in promoting vocal music education and help it effectively implement, which is also one of the effective approaches to improve the aesthetic ability of Chinese citizens.

Methods: Background of introducing vocal assistant system into class. Analysis of features and functions of Android technology. Application of vocal music assistant system based on Android technology in class.

Results: Through the combination of feedback module, microprocessor, and the pronunciation errors suggesting module, the vocal music training assistant system can convey the pronunciation errors. At the same time, with the combination of microprocessor, record module, processor, and storage, the messages of pronunciation errors can be stored in the storage. It is convenient for vocal music trainers to find out their own pronunciation errors. It can achieve the auxiliary effect of vocal music training and is helpful for vocal music trainers to correct the pronunciation errors in the later period. And there is also a connection between one of the outputs of the processor and the input of the correct pronunciation hint module, a connection between the vocal music data comparison module and the input terminal of the microprocessor by feedback module, a connection between two output terminal of the microprocessor and the input of the pronunciation error prompt module and record module, a connection between the output of the record module and the input of the processor, and a bi-directional connection between the processor and storage. Certainly, there are still some defects in the application of the system, especially as an assistant system. Whether the stability of the system or the specific application in teaching activities, there are gaps with the actual needs, which is the direction of future innovation.

Conclusions: With the reform of national education system, all universities and colleges are actively seeking for new education methods and measures. However, when it comes to the development of vocal music teaching assistant software and software application currently, the vast majority of software is designed based on the concept of resource sharing, ignoring the particularity and regularity of music teaching. Therefore, how to develop and design a set of assistant management system corresponding with the practice of vocal music teaching has become the crucial measure of music teaching system innovation.

134 | Research on the project management innovation based on the big data

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Objectives: The development and integration of the cloud computing technology, the mass storage technology and the Internet information technology laid the foundation for the arrival of the era of the big data. In the era of the big data, how to apply the above technological advantages and achievements, optimize the project management, and establish and improve the scientific project management mechanisms has become a subject for the relevant units and staffs to face and think about. With the progress of the science and technology, the information technology has been more widely promoted and utilized. The information level of enterprises meets the requirements of the big data, and the era of the big data is advancing. The big data analysis can provide more opportunities and updates for the enterprise project management, along with challenges. According to the data of practice, the big data analysis plays a very positive role in the project management, which can help to improve the value of the project management and the feasibility of the project management.

Methods: Project management innovation strategy based on the big data technology application. The difference in the innovation environment and conditions. The difference between the driving factors and the innovation ways and paths. Differences between the innovation result and the key factors of success.

Results: The data in the project is always in the state of accumulation, which has the large dynamic characteristics. In the process of the continuous implementation of the project, the data sharing platform is established. When evaluating the project, the relevant personnel can dynamically analyze the data, and optimize the design of the innovative scheme according to the final results, so as to solve the defects and problems in time.

Conclusions: At present, the big data has made great progress in China, and the era of the big data is the inevitable trend in the future. Because of the great superiority of the big data, it is often used in the project management. In order to meet the new requirements of the current market, the project management also needs to be adjusted and transformed properly to achieve the innovative development in the management methods and conditions. The innovation research of the project management plays a vital role in improving the operation and management ability of enterprises and ensuring the long-term and stable development of enterprises.

135 | Research on smart home system oriented to mobile internet under the background of intelligent hardware and internet of things

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Objectives: Smart home is the third major application area of the technology of the Internet of things. The smart home industry under the tide of the Internet of things has broad prospects in China and even in the world. This system constructs a new type of the smart home system based on the characteristics of sensors, interconnection and intelligent control of the Internet of things. It combines the GPRS mobile communication technology, the embedded Internet technology and ZigBee, the wireless network communication technology of a new generation. It overcomes the drawbacks of the wired wiring and has the flexible configuration and the good real-time performance. It is bound to be the development trend of the smart home system in the future.

Methods: Design of the ZigBee wireless communication. Design of the remote monitoring system for the embedded Web server. Design of the GPRS short message alarm.

Results: The purpose of the smart home system is to provide the users with a comfortable and convenient home environment, to obtain all kinds of the real-time information collected by the perceptual control layer through the service management layer, and then make the corresponding control instructions. Users can access the mobile phones, tablets and computers, and transmit the control commands to the service management, which can be parsed and sent to the intelligent gateways. Each gateway can issue commands to the sensor nodes through the ZigBee communication protocol, and control the household devices through the sensor nodes.

Conclusions: The smart home is the future direction of the home development. The arrival of the era of 3G and the rapid development of the mobile Internet build a high-speed communication platform for the remote control and the application of the smart home. Building the smart home system for the mobile Internet is a commanding point in the development of the smart home under the tide of the Internet of things. Firstly, the main networking technological standards of the smart home system are studied and put forward. The multi-protocol adaptation mechanism of the home control soft bus is used to solve the integration of the multi-standard and multi-bottom communication platforms in the smart home system. The home control soft bus also provides the high-speed communication interface between the smart home application and the mobile Internet. Based on the home control soft bus, the networking scheme of the smart home system oriented to the mobile Internet is given, and the implementation methods of the main modules in the scheme are described.

136 | Construction of the practical system of the ideological and political education in universities

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Objectives: For a long time, the ideological and political education of college students in our country has the tendency of formalism and dogmatism, which is disconnected from the life of college students, hindering the effectiveness of the ideological and political education of college students, and affecting the process of socialization and the life of the ideological and political education of college students. In view of this situation, this paper expounds the ideological and political education of college students, and carries on the overall reflection and discussion combined with the practice system of the ideological and political education of college students, and explores the value significance and essence of constructing the practice system of the ideological and political education of college students, so as to enhance the pertinence and effectiveness of the practice system of the ideological and political education of college students.

Methods: Constructing the practical system of the ideological and political education in universities.

Results: A good innovation platform is the carrier of the innovative ideological and political education in universities. Build a good innovation platform to provide a carrier for the ideological and political education in universities. Building an innovative platform can not only improve the quality of the ideological and political education in universities, but also enables all participants to exercise themselves and improve their innovative ability in this platform, so that the innovation of the ideological and political education in universities can be further improved. Therefore, all kinds of resources inside and outside the university should be sorted out as a whole and the innovative platforms inside and outside the university should be built to provide a good carrier for the innovative ideological and political education in the university. Universities should give full play to their own advantages, strengthen the cooperation with the relevant research institutes, local governments and enterprises, and integrate the innovative resources and

innovative forces of universities themselves and the society. We should combine the school education with the science, technology and economic development, and lay a solid foundation for the innovative development of the ideological and political education in universities.

Conclusions: The ideological and political education, as an important part of the higher education, is the cornerstone of training the qualified socialist builders and successors. China's development has entered a new era. This has put forward urgent requirements for the reform of the educational model of the ideological and political education. To build a systematic and complete practical system of the ideological and political education is in line with the characteristics of college students' psychological growth and is to enhance the effectiveness of the ideological and political education. One of the important ways is also an important guarantee for the ideological and political education to adapt to the new era environment.

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137 | Probe into the implementation method of public policy in public management

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Objectives: The implementation of public policies cannot be separated from their social context. The implementation of public policies is embedded in the social context constructed by the political, economic, cultural and historical factors. The decisions made by the actors around the public policies are influenced by the embedded structures and relationship. When there is a consistent or isomorphic relationship between the governance structures adopted by the policies and its embedded policy community and its social context, the implementation of public policies tends to be successful. When the governance structure adopted by the policies is inconsistent or different from the embedded social context, the implementation of public policies will be easily disturbed and hindered by many factors, so that the implementation of public policies is changing, and it is difficult to implement the public policies.

Methods: Method of the public policy implementation in the public management. Creating a good environment for the human resource management in public sector. Enriching the contents of the human resource management in the public sector in the policy implementation. Improving the human resource management in the public sector in the policy implementation. Establishing the normative model of public human resource management.

Results: At present, China's stakeholders are changing from relatively single to pluralistic, and the policy environment has changed from closed to relatively loose. The power relationship between the central and the local governments is facing a new orientation. All of these provide space for the policy variation in the process of the policy implementation.

Conclusions: At present, the standardization and legalization of our government institutions are not high, and the randomness of change is great, and the rule of man is strong. Although many rules and regulations have been formulated in the government institutions since the reform and opening up, people do not follow them strictly. The main manifestation is that people respect the words and deeds of the leading individuals and the authority of personality is greater than everything else. Therefore, the attitude of respecting the authority and the habit of obeying the authority will hinder the effective implementation of the policies, so we must strengthen citizens' legal concept.

138 | Research on the impact of executive compensation gap on corporate performances based on EVA

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Objectives: How to use the design of the senior executive compensation gap to improve the company performances is not only the focus of the academic discussion, but also an important problem to be solved urgently in practice. This paper reviews the literature on the impact of the executive pay gap on the corporate performances and constructs a model through the theoretical analysis. In a company with good competitive atmosphere, the executive pay gap will have a positive impact on the performances. In a company that emphasizes collaboration, it will have a negative impact. Based on the analysis of a performance index based on EVA, it is concluded that the executive pay gap will have no significant impact on the performance, and that the executive pay should be formulated through the performance evaluation criteria, so that the benign and effective relationship between the executive pay gap and the company performances can be established.

Methods: A relatively simple salary incentive method is to determine the proportion of the managers sharing EVA, usually a fixed proportion. The amount of the bonus is calculated according to the adjusted EVA.

Results: Evaluate and manage the performances scientifically based on EVA. We should not only evaluate the

business performances objectively and truly, but also start from the 4M system (EVA performance evaluation, incentive mechanism, ideological concept, and management system), give full play to its basic functions as a management method, and improve the business performances and values of banks in an all-round way. The value management of EVA should be upgraded to a strategic concept. The performance evaluation system of the EVA companies should rise to the height of the strategic concept. It caters to the company's business objectives, that is, to maximize its own values.

Conclusions: The design of the executive compensation gap is actually a game between the salary makers and the recipients. The salary makers should design an appropriate size of the salary gap to motivate the executives, but at the same time, we should also consider the hearts of the recipients, so that they cannot feel dissatisfied, so as to achieve the game equilibrium between the two. Companies should strengthen exchanges with the executives, regularly understand their response and demand for the compensation through questionnaires or other forms, and regularly analyze the salary situation of other companies in the industry, so as to establish a more reasonable salary gap in the interaction with the executives and the in-depth understanding of the external salary environment.

139 | Exploring the reform of the music education in colleges and the development of the traditional music culture

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Objectives: The traditional music has a very deep historical foundation. Facing such a very complex reality, and aiming at the development of such a culture, there are many problems worth pondering. Under the current situations and background, under the heavy responsibility of the national cultural renaissance, we need to strengthen the study and inheritance of the traditional national music, and the great national renaissance needs certain material foundation, but more needs a profound cultural foundation. Each civilization cannot be separated from the spiritual civilization and material civilization at the same time, and civilization is also developed on the basis of cultures, which need to be constantly irrigated, so that the glory of the traditional Chinese music can shine on the stage of the development of the times.

Methods: In the future, the music education in colleges and universities should focus on cultivating students' innovative spirits from their different interests, so as to ensure the good development of the traditional music culture.

Results: The diversified music education in colleges and universities should pay attention to the comprehensive quality of teachers. Teachers are important implementers of the music teaching in colleges and universities. Therefore, the reform of the music education in colleges and universities should pay more attention to the comprehensive quality of teachers. The diversified music teaching not only requires teachers to have the correct teaching concepts, fully reflects the concept of the diversified music teaching, requires teachers to have the ability of the diversified music teaching, and also has a positive motivation.

Conclusions: The music teachers in colleges and universities should have a positive working attitude and regard the music education as a complete life. They should not only become experts in the music theory, but also pursue to become experts in the music education. Only in this way can we fully embody the advantages of the diversified music education, and make the music education of colleges and universities in line with the world. The diversified music cultural education plays an important role in the music reform of colleges and universities, and it is also the general direction of the development of the traditional cultures in our country. Therefore, colleges and universities should pay more attention to these four aspects of work. Starting from doing well in the diversified music education, we should enhance the quality of the music education and the effectiveness of the personnel training in our colleges and universities.

140 | Application of WeChat mixed learning in English teaching in higher vocational colleges

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Objectives: The mixed learning mode based on We-Chat integrates the face-to-face learning with the online learning, optimizes and integrates the two modes, breaks through the limitations of the time and space in the traditional teaching, and makes the learning easier, more convenient and more three-dimensional. Through the online and the offline communication, teachers can timely understand students' learning dynamics, grasp students' learning situations, and ensure the smooth development of our teaching. Students can learn English anytime and anywhere, and the learning environment is more open, effectively improving the learning efficiency. The abundant teaching resources and various functions on the We-Chat platform have greatly expanded the teaching channels, made up for the shortcomings of the traditional college English teaching mode,

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and promoted the good development of the college English teaching.

Methods: We-Chat is the real-time interactive software launched by Tencent. It is simple to operate and has various functions. It has been more and more used in the field of our teaching. Through the group chat, the real-time communication between teachers and between teachers and students can be conducted to solve problems.

Results: The application of We-Chat as a new teaching platform in higher vocational English teaching can not only stimulate students' interests in learning, improve the teaching efficiency, really realize the requirements of the new curriculum concept on our teaching, and let students be the masters of our learning, but also promote students' subjective initiatives, and can also promote our higher vocational English teaching mode to be gradually modernized.

Conclusions: We-Chat is the real-time interactive software launched by Tencent. It is simple to operate and has various functions. It has been more and more used in the field of our teaching. Through the group chat, the real-time communication between teachers and between teachers and students can be conducted to solve problems. Through the public platform, the accurate and personalized learning materials can be pushed forward, while assisting our teaching for students to learn independently. Through the function of the simple data statistics, the learning evaluation can be carried out to help meet the needs of the learners. Therefore, based on We-Chat's hybrid learning model, with the help of the rich network resources, knowledge is presented to learners in many directions and angles, which is conducive to creating a good learning environment, optimizing teaching links and improving the learning effect.

141 | How to strengthen water resources management and promote sustainable utilization of water resources

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Objectives: With the deepening of various domestic reforms, the pace of social development is gradually accelerating. In this development process, various problems such as over-exploitation and waste of resources are often caused. The environmental pollution problem is becoming more and more serious, which has broken the original ecological balance. The shortage of water resources has gradually become a global problem. China is a large population country with a huge demand for water resources. Therefore, the problem of water resources has become the focus of social

attention. China's population distribution is not balanced, and the distribution of population, water resources and land is not balanced.

Methods: The research of this subject has spanned many subject fields. It needs to apply various subject methods, basic theories and achievements, and comprehensively study this subject from the whole to ensure the objectivity and accuracy of this subject research.

Results: After the research on this topic, we can deeply realize that water resources have the characteristics of limited and cyclic regeneration and uneven distribution, and also understand the best way to strengthen the management of water resources engineering to promote the sustainable utilization of water resources. We can start from two aspects of water resources special management and water resources development and utilization, and control them so as to give full play to the efficiency of water resources special management and realize the sustainable utilization of water resources.

Conclusions: It can be said that the current domestic water resources are in a serious shortage stage. The demand and emissions are increasing year by year, which puts forward higher requirements for the special management of water resources. Therefore, in order to further strengthen the special management of water resources and better realize the sustainable utilization of water resources, it is necessary not only to support the national policies, but also to strengthen the construction of internal management system and absorb more professional management talents, so as to improve the comprehensive level of special management of water resources and ensure the sustainable utilization of water resources.

142 | Evaluation of National Park Residents' livelihood resilience in developing countries — A case study of the Giant Panda National Park, China

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Objectives: The elasticity theory provides an important theoretical basis for the scientific analysis of the interaction between the disturbance and the adaptability in the social ecosystem. Today, with the increasingly prominent contradiction between man and land, elasticity is a valuable characteristic of nature and the human system. Based on the introduction of the origin of elasticity, the definition of elasticity is analyzed, and the engineering elasticity, the ecosystem elasticity and the social-ecosystem elasticity are explained. On this basis, the differences and links between elasticity and vulnerability and between adaptability and sustainable development are

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emphatically analyzed, and the quantitative evaluation and application of elasticity are reviewed in terms of the evaluation framework, the evaluation indicators and the evaluation tools.

Methods: The quality of life includes not only the economic internal letter of welfare, but also many non-economic factors such as health, education, poverty, social environment and natural environment qualities that affect people's living conditions. This paper puts forward the evaluation index system of residents' quality of life in China from eight aspects: income, consumption, social security, education, health, resources and environment, urban environment and social services. The current comprehensive evaluation method of the quality of life will not only be affected by the subjective factors, but also cannot eliminate the overlapping information between the indicators. The comprehensive evaluation of residents' quality of life by the principal component analysis can solve these problems, thus improving the authenticity of the results.

Results: The national parks constructed in China will be an important form of the in-situ biodiversity conservation in a certain period of time, especially after the social and economic development has reached a certain stage.

Conclusions: From the manifestation of the community conflicts in overseas national parks to the essence of the conflicts, the distribution and compensation of interests, the land policy, and the information and emotional communication can be the focus of the community conflict prevention consideration in the pilot work of China's national park system. When the above considerations are at the level of the national park system, they involve the determination of the parkland ownership, the design of the community participation system and the consideration of the franchising system. Among them, the determination of the land ownership is related to the unity of contradictions between Park ecological protection and community development. The design of the community participation system is the key to determine the distribution and compensation of the community interests among many stakeholders. Franchising also involves the benefit compensation and the life reconstruction of the community residents.

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143 | Research on the construction of the basketball teaching and training system based on the motion capture

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Objectives: The motion capture system is a device based on the computer graphics and the virtual simulation technology to accurately measure and record the movement of the moving objects in space. Its application in the production of the basketball teaching and training resources, the teaching process, and the assistant teaching and training will have an important impact on the means, process and mode of the basketball teaching and training, so as to put forward the suitable ways and methods for the characteristics of the physical education and teaching in colleges and universities. The use of the motion capture system in the basketball teaching and training can make the basketball teaching and training get rid of the state of relying solely on the experience and enter a scientific and digital era, which is conducive to students' understanding and learning of the sports movements, not just simple imitation, which is conducive to students' mastery of the sports skills, thus improving the quality and efficiency of our teaching.

Methods: Comprehension method; Game method; Psychosomatic training method.

Results: In the basketball teaching and training, the timely feedback on mastering the degree of the technical movements is helpful to improve their technical training methods and improve the process of regulating and controlling their technical training. To achieve this goal, we must use the scientific testing and diagnosis combined with the abundant experience diagnosis. That is, use the advanced biomechanical equipment and methods to diagnose, and then determine combined with the teachers' practical experience. As an effective device for the biomechanics research, the motion capture system can effectively provide more and more valuable information for the basketball teaching and training.

Conclusions: The introduction of the motion capture analysis system into the basketball teaching and training can provide the real and objective sports information and the quantitative sports data. It plays an important role in improving the teaching methods and means, expanding the teaching resources, building the technical means, expanding the teaching and training space, and improving the teaching quality and students' sports skills. It also plays an important role in dancing, acrobatics and mechanical operations. It has a certain reference value for the practical teaching of dance, acrobatics, and mechanical operations with the limb exercises as the main means.

144 | Research on mobile English teaching model based on web intelligent terminal

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Objectives: Intelligent terminals generally adopt the classical architecture of computer, that is, the arithmetic unit (Calculator) is also called the arithmetic logic unit (ALU)) controller (Controller), memory (Memory). The input device

(Input Device) and the output device (Output Device) are composed of 5 components, in which the arithmetic and controller constitute the core component of the computer, the central processing unit (Center Process Unit,) for short CPU). With the rapid development and popularization of computer network technology, the popularization of WEB and the development of mobile communication technology bring opportunities for mobile learning. The new mobile learning mode comes into being. The development of mobile learning mode will promote a new round of English teaching mode reform. This paper explores the construction and application of mobile teaching model, which lays a foundation for further study of mobile English teaching model.

Methods: Teacher-student interaction application mode the teacher-student interaction application mode follows the "motivation-teaching-practice-evaluation-review" process. Self-exploration application mode the self-exploration application mode follows the "problem-hypothesis-exploration-review-enhancement" process. Practice Application Mode the practice application mode follows the process of "situation design-exciting engine-knowledge learning-game practice-summary evaluation". The group collaboration application model follows the process of "Task Proposing-Task Analysis-Division Cooperation-Reporting Results-Summary Communication".

Results: In combination with the actual situation of digital teaching in colleges, the following points should be grasped in the transition to mobile teaching in the future: The reform of mobile teaching mode is a systematic project involving teaching objectives, teaching content, teaching design, teaching methods and other aspects. Therefore, it is necessary to carry out top-level design and implementation. Based on the digital teaching environment of the college, the digital teaching service platform is transitioned to the mobile teaching environment. The two states are compatible with each other. It can not only meet the requirements of large-scale online courses, but also meet the requirements of the mobile teaching environment and improve the application of digital teaching. Combining with the current situation, the design of mobile teaching mode that meets the teaching needs of the college, personally thinks that it should start from five aspects: designing teaching ideas, designing teaching objectives, designing mobile teaching resources, designing teachers' leading activities, students' main activities, designing application patterns and forming stable models. Make mobile teaching a new highlight of the college's teaching.

Conclusions: The current concept of education for the whole people and the lifelong education and education has become more and more popular. The emergence of mobile learning has largely satisfied the learning needs of contemporary learners – better adapting to society and self-development in work and life. With the continuous development of mobile technology, mobile learning will be better popularized and promoted. The education industry should make mobile learning an important choice for school education, and take this opportunity to carry out a new round of teaching model reform based on mobile learning mode, which truly plays an important role in education informationization.

145 | "Gesar's Epic" and "Homer's Epic" – Commentary on comparative studies and care and paraphrase from the perspective of eco-aesthetics

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Objectives: The researches on Gesar's Epic and Homer's Epic are quite sufficient in the academic circles. However, the comparative study between the two epics and the comparative study between the two epics and others are relatively weak. It is based on the weakness here that this paper reviews the comparative studies of the two epics. Generally speaking, the quantity and the quality are not optimistic. From the perspective of the eco-aesthetics, this paper also explores the new ideas of the comparative studies of the two epics, and tries to construct a new system of the cross-comparative study of epics.

Methods: Ecological aesthetics is a new approach to the study of the two epics. Aesthetics, as well as many branches of the aesthetics derived from it, including eco-aesthetics, is not only a hot topic in the field of literature, but also a hotspot of researches. Like a whirlwind, it has spread to the social level, and has become a popular topic among the ordinary people after dinner, even though it seriously deviates from the academic track.

Results: Further broaden the fields of the studies of the two epics. From the above, although there is a glimmer of light in the new researches of the two epics, after all, they haven't come into the room to show their magnificence. This requires us to be a conscientious person, in the newly expanded field of the ecological aesthetics, to pluck fruitful fruits.

Conclusions: The snowy plateau and the blue ocean are two beautiful scenery paintings. The great epics bred in these two unique geographical environments must clearly reflect the natural beauty and the humanistic beauty of their respective leading styles, thus reflecting the similarities and differences of the ecological aesthetics of the eastern and the western civilizations and the trend of the continuous blending and interoperability. This helps to improve the ecological consciousness of the modern people, and has important practical significance for solving the ecological crisis facing our mankind.

cultural heritage in Tibet (13&ZD141)" is "Research on the collation, protection and inheritance of the Tibetan folk literature and Gesar's rap art".

146 | Research on the rural E-commerce development and the entrepreneurship service system under the background of E-commerce

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Objectives: With the continuous development of the Internet era, all walks of life are making full use of the sales mode of the e-commerce platform, and the agricultural e-commerce is one of them. It is not only a new economic form, but also can be applied to various industries to enhance their economic strength. The agricultural e-commerce mainly refers to the economic activities centering on the agricultural production and trading with it, which mainly includes the agricultural product sales, the online payment, and the logistics distribution. The new economic form of the Internet+ has also caused the widespread concern in agriculture.

Methods: Improve the e-commerce infrastructure construction. The government runs through the people's development process, and the development of the agricultural e-commerce in the initial stage cannot be separated from the support of the government departments.

Results: Promote the local employment and entrepreneurship of the farmers and accelerate the important grasp of the pace of the new urbanization construction. The rural e-commerce can help the farmers achieve the local employment and entrepreneurship, promote the return development of the large numbers of the migrant workers, and help solve a series of the rural social problems such as "hollow countryside" and the rural left-behind children. At the same time, the huge development space and the potential of the rural e-commerce can attract the high-level talents with the professional knowledge and the innovative consciousness to return home and start businesses, which can promote the virtuous circle of the rural personnel flow, and inject fresh vitality into the rural economic development.

Conclusions: Under the background of the e-commerce, the core goal of the rural e-commerce development and the entrepreneurship service system construction is to make the farmers become the biggest beneficiaries of the platform. We should consider two aspects. One is the establishment of the downstream system of the materials and the consumer goods for the rural production and the daily use, so that the rural areas can purchase goods on the designated operating platform through the village-level chain outlets. The other is that

the agricultural products are sold online directly through the marketing strategy of the operation center, which can greatly improve the price space and the marketing market, and increase the productive income of the rural areas. Therefore, farmers will naturally become the beneficiaries of the rural e-commerce.

147 | Discussion on the bilingual teaching model of management courses in colleges and universities

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Objectives: The most basic harvest of offering the bilingual teaching in professional courses is the mastery of the professional knowledge and abilities. The most direct harvest is the improvement of the foreign language level. The deeper harvest is the introduction of the advanced foreign teaching concepts and teaching methods, which is a long-term task of the teaching reform in colleges and universities. With more and more foreign-funded enterprises entering China, there is an urgent need for professionals with the high foreign language proficiency. The bilingual teaching in China is to train the high-quality, compound and international talents, which is suitable for the needs of enterprises. At present, the bilingual teaching in our country is still at the stage of trial and exploration. It has a long way to go. It is believed that with the increasing concern and attention of the entire industry and society, through the unremitting efforts of schools and teachers, the bilingual teaching will surely reach a new level in quality and quantity.

Methods: In the implementation of the bilingual teaching in management, we should pay full attention to the curriculum and the teaching management in a variety of ways through the use of the teaching time and the teaching materials and so on. On the basis of choosing a reasonable teaching mode, the best effect of the bilingual teaching of management is achieved.

1). Class mode and time arrangement.
2). Selection of textbooks and teaching methods.
3). Enriching the teaching means.
4). Increasing the practical teaching links.
5). Training the teacher to improve the quality.
6). Classification of the students and teaching them according to their aptitude.

Results: The bilingual teaching of management is a timely measure to adapt to the development of the times. However,

the real bilingual teaching mode of the management teaching in China has not yet formed. It needs the accumulation of experience and the continuous exploration in practice to gradually mature and achieve the desired goals. The bilingual teaching is not only the reform and adjustment of the teaching contents, teaching methods, textbooks and curriculums, as well as the teacher training, but also involves deep-seated problems such as the objectives and specifications of the personnel training, which can be said to pull one hair and move the whole body. Normalizing the teaching mode of management and guaranteeing the effect of the bilingual teaching cannot be achieved only from one aspect, but from the aspects of teachers, students and teaching methods.

Conclusions: The bilingual teaching of management can not only acquire the subject knowledge, but also improve the foreign language listening, speaking, reading and writing, and especially thinking ability, and ultimately achieve its goal, unless a bridge is set up between teachers and students to transfer from their mother tongue knowledge system to the foreign language knowledge system and instil a new teaching and learning concept.

148 | Research on the development of panzhihua industrial economy under the innovation-driven background

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Objectives: This paper discusses the formation and development of Panzhihua's industrial economic structures under the background of the national implementation of the "innovation-driven" strategy, and draws on the experience of the developed countries in the development of the traditional industries and the industrial transformation practices of domestic industrial bases, and combines with the main problems existing in Panzhihua's industrial structural transformation and innovation-driven development, puts forward the countermeasures and suggestions on the innovation-driven transformation of Panzhihua's industrial economic transformation and development.

Methods: Experience of the development and renovation of the traditional industrial bases in developed countries. Practice of the economic transition of the industrial bases in typical areas of China. Extending the industrial chain and promoting the industrial upgrading. Perfecting the environmental management and the infrastructure construction to rebuild the scenery of the valley basin. Reducing the industrial operation cost and improving the market competitiveness. Stimulating the intention of enterprises to invest

and promoting the development of the industrial economy. Accelerating the pace of the industrial diversification.

Results: There are some problems in Panzhihua's economic development, such as the heavy industrial economic structure, the unreasonable industrial enterprise structures, the extensive industrial products, the falling prices, the high economic operating costs, the weak economic growth and the low investment willingness of enterprises. Under the background of the "innovation-driven", Panzhihua's industrial economy can be transformed into an industrial chain by extending the industrial chain, speeding up the optimization of the industrial structures and improving the environmental management and the infrastructure construction, reducing the industrial operation costs, improving the market competitiveness, stimulating the enterprise investment will, promoting the industrial diversification, promoting the industrial economic development, reforming the traditional education, and achieving the innovation-driven development with the association of the ventures and so on.

Conclusions: Through the study of Panzhihua's industrial economic transformation, we find that innovation drive plays such an important role in extending the industrial chain and promoting the structural optimization. With the emergence of the new normal economy, innovation drive, as an efficient use of the vanadium and titanium in Panzhihua City, constructs a national innovative vanadium resource experimental area, a modern agricultural base and a sunshine Ecotourism resort. Important management strategies have been widely incorporated into every corner of Panzhihua's industrial economic development. It has become a "soft power" to promote Panzhihua's economic development. At the same time, if the resource-based cities want to successfully transform and convert in the fierce market competition, they also need to make full use of the driving force of the innovation to eliminate all kinds of obstacles to the development of the city. Relying on the scientific and technological innovation and realizing the green economy is not only the need of the economic development of the Panzhihua industries under the new normal economic conditions, but also the source of power to push our country from "Made in China" to "Created in China".

149 | Study of the impact of the connotation of "Three Orientations" on the book translation in Guangxi

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Objectives: General Secretary Xi Jinping has endowed three precise orientations with the overall operation and development of Guangxi in light of various conditions in Guangxi.

Specifically speaking, Guangxi should actively construct an international corridor facing ASEAN, and Guangxi should build a new "strategic fulcrum" in the process of opening up and development of the southwest and central and southern regions of China, and more attention should be paid to the formation of an important southwestern gateway linking "The Belt and Road Initiative".

Methods: In the rolling tide of the times, the book translation industry in Guangxi needs to continue to promote the construction of the sustainable development platform, deepen the internal reform of the book market, innovate the management mechanisms and enhance the management efficiency.

Results: The contents of the Chinese books translated and published in East Asia, Southeast Asia, South Asia, West Asia and North Africa are significantly different from those in Europe and the United States, and transcend the translation methods in Europe and the United States. They have penetrated into the new technology and the multimedia era of images, cartoons, and games and so on. In recent years, the number of the translation and publication of the Chinese theme books in East Asia and Southeast Asia, which are deeply influenced by the Chinese cultures, has increased significantly, such as 734 Japanese books, 426 Korean books, and 840 Vietnamese books that have been translated and published in China, which is beyond our expectation. Other languages include 137 Thai, 48 Indonesian and 36 Malay.

Conclusions: Book translation is an important link in spreading the connotation of "three orientations" in Guangxi. The mass presentation and instant updating of the Internet communication characteristics require language workers to keep close to the reality of the audience and innovate the style of discourse expression, enhance the sense of the times and attraction of discourse communication with excellent style of writing and local translation, so that Chinese culture can be more directly loved by the people of the world.

150 | Study on Eco-transformation strategy of the rural tourism in China under the background of the new urbanization construction

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Objectives: With the transformation and upgrading of the social and economic development model, China has gradually increased the development of the tertiary industry. Tourism, as an important part of the tertiary industry, has attracted wide attention from all walks of life. The rural tourism in China has developed rapidly in recent years, but there are also many ecological problems. Therefore, the ecological transformation of the rural tourism economy under the new urbanization in China has certain necessity. At this stage, the rural tourism boom has developed rapidly. In the process of its development, many problems have arisen. In the bottleneck period, the rural tourism deserves our re-examination and reflection.

Methods: Study on the transformation and upgrading of the rural tourism under the background of the foreign urbanization construction. Research on the transformation and upgrading of the rural tourism under the background of the domestic urbanization construction.

Results: Under the background of the new urbanization, the development of rural tourism should pay more attention to its strategic, epochal, scientific, technological, cultural and participatory characteristics. Pay more attention to the protection, restoration and reconstruction of the rural cultures and the revival and prosperity of the rural tourism sites. Pay more attention to the organic integration of the rural ecological construction and the rural tourism, and choose the development path suitable for the beautiful countryside and the ecological civilization construction in accordance with the local conditions. More attention should be paid to the optimization of the spatial structure of the rural tourism destinations and breaking through the shackles of the traditional urban-rural dual space separation to realize the effective docking and the integrated development of the urban-rural tourism space.

Conclusions: For the development of the rural tourism in the context of the new urbanization, we should integrate the multiple disciplines, achieve mastery through a comprehensive study of the subject, carry out the overall research, and increase the feasibility and practicality of the theories. It is undoubtedly of great significance for establishing the healthy urbanization to scientifically guide the rural tourism to develop in the right direction. Starting from the dilemma faced by the rural tourism in China, this paper deeply studies the impact of the urbanization on the spatial, temporal and cultural dimensions of the rural tourism development, and concludes three paths of the rural tourism development in China: the ecological path, the cultural path and the landscape path. It is believed that in the context of China's entering the leisure era and the new urbanization wave, building a rural tourism complex can effectively realize the breakthrough development, the comprehensive development and the green development of the rural regional economy, and will become an important mode of the economic upgrading in the vast rural areas of China.

151 | Exploration and practice of the E-teaching in the PE English education from the perspective of ESP

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Objectives: The purpose of the ESP teaching is to "broaden the specialty and apply what you learn", with special emphasis on training students' practical application abilities. The academic English and professional English should be emphasized in the English teaching in sports colleges and universities. In order to further improve the comprehensive application ability of English in the sports industry and the sports academic field, English teaching in sports colleges should be adjusted to English for special purposes.

Methods: Establish the network self-regulated learning system of the English curriculum for students in physical education colleges. Physical education students come from different colleges and universities and have different sports specialties, and their English proficiency is uneven.

Results: Establish a reasonable teaching staff. In view of the unreasonable ESP teaching staff, no matter what kind of the teaching mode, we should first train the ESP teachers with the strong English abilities and excellent professional knowledge. However, the implementation of such training is difficult and time-consuming, and the network teaching model can provide a very reasonable solution. Use the network resources to mobilize students' learning autonomy. The advantage of the network lies in its abundant resources. Collecting and inquiring network resources will be more conducive to the construction of the educational resources. At the same time, the network has brought convenience to the communication between teachers and students and the sharing of the results. In the use and inquiry of the network resources, students can participate in it. Under the guidance and help of the teachers, students can independently use the network to search and organize the information, truly embody the student-centered and self-learning teaching ideas, fully mobilize students' enthusiasms and become the builders of knowledge.

Conclusions: Through questionnaires and interviews with teachers and students, this paper evaluates the teaching materials, methods and effects of the ESP course for English majors. The results show that the compiling idea of improving the language knowledge levels by learning sports knowledge is suitable for the ESP curriculum teaching, which satisfies the needs of students and teachers and has good results. The various teaching methods adopted in the course are suitable for the curriculum teaching, and students are satisfied with the teaching results. The evaluation of the overall teaching effect of the course is relatively high. Through the curriculum learning, students' sports knowledge, language levels and speculative abilities have been improved.

152 | The songs of Chu in tang and song dynasties and the dissemination and acceptance of its aesthetic thoughts

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Objectives: The Songs of Chu has a very high aesthetic value, growing in the esteem of the future generations, and has a far-reaching impact on the literature and aesthetics of the later generations. Chu customs, Chu cultures, poet's rhyme, vanilla beauty, and national integrity and so on promote the Chinese people's pursuit of ideals and the spiritual realm of the aesthetic life. The overall style of The Songs of Chu is sad, plaintive, aesthetic and melancholy.

Methods: This shows that The Songs of Chu influenced the Japanese culture and life very early, and its aesthetic ideas were widely recognized and well known by people with the spread of The Songs of Chu.

Results: The literary creation and dissemination in the Tang Dynasty have obvious characteristics, mainly in three aspects: diachronicity, extensibility and universality. These three characteristics promote the dissemination of the aesthetic thoughts of The Songs of Chu. As for the dissemination of the aesthetic ideas in The Songs of Chu, predecessors have made more and more in-depth studies on the dissemination and acceptance of The Songs of Chu in Han and Wei Dynasties, while the dissemination in Tang and Song Dynasties should be further studied in depth and breadth. Tang and Song Dynasties are the important periods for the dissemination and researches of The Songs of Chu's aesthetic thoughts, which has its special research significance and values. This paper mainly discusses the dissemination of the aesthetic thoughts in The Songs of Chu in Tang and Song Dynasties from two aspects: the dissemination background and the dissemination consciousness.

Conclusions: Due to the different strata, the understanding and research on the literary, cultural, artistic and spiritual aspects of The Songs of Chu and its aesthetic connotation are not consistent. But it is certain that the intervention of different strata has expanded the dissemination of The Songs of Chu and its aesthetic thoughts, enriched the dissemination forms of The Songs of Chu and its aesthetic thoughts, and especially is of great social significance for the communication and development of the aesthetic thoughts of The Songs of Chu.

153 | Analysis and research on the big data of Hainan tourists' degree of satisfaction with the short-rent platform

Jing Yang; Xiaoying Zhang; Xiaohua Shi

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Objectives: The big data are changing human life at a fission rate, and its rapid development has constantly led to the renewal and iteration of various technologies. At the same time, with the support of the new mobile devices such as the tablet computers, smart phones and smart sports equipment, tourism is moving towards "wisdom" imperceptibly. On the basis of the big data, tourists can use the mobile terminals to access the Internet, timely understand the tourism information, the tourism dynamics and the tourism resources, and arrange their tourism activities and working plans conveniently and efficiently. Starting with the analysis of the big data analysis platform represented by Map Reduce/Spark, this paper explores the big data analysis of Hainan tourists' satisfaction with the short-rent platform in combination with the understanding of situation of Hainan's tourism short-rent market.
Methods: Generally speaking, the short-rent platforms collect the data through the internal and the external channels.
Results: The real-time updated pricing platform also lays the foundation for their rational shopping. In addition, the big data realizes the data sharing and interoperability, and further optimizes the purchase behaviors through the evaluation of the "donkey friends" before traveling. In the era of the big data, it is no longer difficult to get one vote. The big data forecasting passenger flow promotes the planning of the tourist attractions. At present, the digital scenic spots will be built in 5A or 4A scenic spots in Hainan. Through the intelligent monitoring system, cameras will be installed in the service areas, main scenic spots, and parking lots, key sections of the traffic insurance, ticket offices, and ticket checkpoints, to ensure the flow of people, the traffic flow, the tourist safety and the queuing order of each core node at a glance, so as to coordinate the human and the material resources in time, dredge the crowded section of the tourist volume, balance the distribution of the passenger flow in each scenic spot, and control the entire scenic area's passenger flow within a reasonable carrying range of the scenic area environment.

Conclusions: With the continuous cross-integration of the big data and the tourism industry, Hainan should not only embody wisdom in the construction of the tourism infrastructure and the tourism service facilities, but also focus on the demand of tourists through the big data to carry out the supply-side structural reform to further enhance the tourists' degree of satisfaction.
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154 | Research on the influence of enterprise culture innovation on enterprise management innovation

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Objectives: The enterprise cultures include the concepts of the enterprise management and development, and also cover the ways of doing things in the process of the enterprise management, which reflect the enterprise's humanistic attitudes towards employees. The innovation of the enterprise cultures can not only greatly improve the cohesion of the enterprises and keep the entire enterprise in one mind, but can also become the spiritual pillar of the enterprise development and enhance the competitiveness of the enterprises in the market.
Methods: The innovation of the enterprise management is not only the soft power of the development of the enterprise productivity, but also an important driving force to promote the innovation of the enterprise management and enhance the levels of the enterprise economic efficiency, so that the comprehensive ability and strength of enterprises can be improved simultaneously.
Results: The innovation of the enterprise cultures promotes the process of the innovation of the enterprise management method. The innovation of the enterprise management methods relies on the means, materials and experience of those entities, and also needs the assistance of the cultural thought, so as to lay a solid foundation for the realization of the healthy development goals of the modern enterprises. In the process of the development, modern enterprises need to integrate material means and cultural means organically, and complement and improve each other, so as to achieve the goal of creating a high-quality environment for the development of the modern enterprises. In the new era, the competition in the economic market environment is becoming increasingly fierce.
Conclusions: In the process of the modern enterprise development, the cultural innovation is an effective driving force for the innovation of the enterprise management and a solid backing for the enterprise development. The innovation of the

enterprise cultures promotes the innovation of the enterprise management, and at the same time it guides the development direction of the enterprise management, accelerates the realization of the scientific and modern enterprises, greatly improves the competitiveness of the enterprises in the market, and makes the enterprises gain a place in the market economy.

155 | Research on the importance of the preschool music education in the cultivation of children's qualities

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Objectives: With the continuous attention of the public to the cause of the early childhood education and the quality training of the early childhood, the pre-school music education has been praised by more parents and the early childhood educational experts. Music can not only cultivate children's sentiment, but also promote the improvement of their qualities and their overall development. This paper analyses the importance of the preschool music education for children, the practical problems faced by children's quality training and how to improve it to bring about better quality training for children, and provides some reference for parents and educational experts.

Methods: Develop the rich and colorful music activities. Music education in combination with the game activities. Choosing the music teaching contents based on children's interests.

Results: Under the new curriculum standards of the constant innovation and reform, the goal and purpose of our education is the quality education. The music education can cultivate children's overall qualities to a large extent. Therefore, the music education is widely used in the classrooms. The pre-school music education is of great significance to the comprehensive quality education of children, but there are still some drawbacks in the preschool music education in China, which affect the significance of the music education.

Conclusions: The preschool music education is the key structure and the main content of the preschool education. Especially at present, the society and the parents all realize that the preschool music education plays an integral role in the long-term development and the comprehensive improvement of children. The attention of all walks of life to preschool music education is gradually strengthening. The pre-school music education should complete the enlightenment to children through music, realize the cultivation of children's interest in music, and develop their attention, memory, observation, aesthetic abilities and expressive abilities in an all-round way. We should form a way and mechanism to promote children's cognitive, emotional, affective, behavioral and will perfection, so as to give full play to the comprehensive educational value of the pre-school music education more effectively.

156 | Discussion on financial support countermeasures for family farm development

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Objectives: Capital is the "blood" to promote the sustainable operation and development of enterprises. The healthy growth and development of family farms are closely related to the input and guidance of the credit capital elements. Taking Fujian Province as an example, this paper expounds the characteristics of the financial demand of family farms in Fujian Province, such as the strong credit financing willingness, the high credit demand, the diversification of the financing demand, and the low efficiency of the credit funds utilization. It also analyses the main problems existing in the process of the credit financing of family farms and puts forward some countermeasures and suggestions on how to strengthen financial support for the development of family farms.

Methods: First, increase the financial support. Second, change the concept of the bank credit management. Third, innovate the credit products and services. Fourth, we should strengthen the self-construction of family farms.

Results: Firstly, commercial banks have weak willingness to support. At present, the external financing of family farms from commercial banks is seriously inadequate. Secondly, the design elements of the bank credit products are difficult to meet the actual financing requirements of family farms. Thirdly, the traditional credit technology is difficult to apply to the rural production and operation scenarios of family farms. Fourthly, the development of the agricultural insurance lags behind, failing to play a role in ensuring the credit financing of family farms.

Conclusions: As the microcosmic basis of the modern agriculture and the important development orientation of the future peasant household economy, the family farm is the realistic demand and key to accelerate the development of the compound modern agriculture and realize the revitalization

of the rural industry in China. It plays a central role in the new agricultural management subject of the scale, intensiveness, organization and socialization that the country is striving to cultivate. Among them, the input and guidance of the credit capital elements is one of the most important factors to promote the development and growth of family farms. Although the state has attached great importance to the financing of family farms, it is still an indisputable fact that family farms continue to suffer financing difficulties in their development process, and the shortage of funds is still the most important problem restricting their development. Therefore, how to increase the credit support and promote the development of family farms has not only become the focus of the government policy making, but also the research focus of the academia and the financial circles.

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157 | Construction of management ability of counselors and students in higher vocational colleges in "Internet Plus" Era

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Objectives: The main source of students in higher vocational colleges has become post-95. This group of students has undergone great changes under the background of the internet plus era. They are basically the only children in the family, loved by their parents since childhood, and like to enrich their lives and study with Internet technology. Compared with the post-80s students, the current higher vocational college students are more distinctive in personality. They like to be self-centered, have a weak sense of collectivism, have a weak learning foundation, do not pay much attention to school discipline and rules, and are influenced by Internet technology. Their values are more diversified and their personalities are very obvious. This poses certain challenges to the management of higher vocational counselors. Higher vocational counselors must combine the actual situation of higher vocational college students and adopt scientific management programs to achieve resonance of higher vocational college students and enable them to grow healthily. However, from the current point of view, many vocational counselors are not good at carrying out student management, and they have not taken management measures according to the actual situation

of vocational college students, which shows that vocational counselors are still relatively weak in student management ability. Based on this background, this paper has carried out the research on the construction of the management ability of counselors and students in higher vocational colleges under the background of internet plus.

Methods: This paper uses the methods of literature, observation and interview to carry out research on the current situation of the management ability of higher vocational counselors' students under the background of internet plus and to dig up the problems. First of all, the data related to this article are collected through CNKI and Wanfang database, and then, some counselors are interviewed to understand their management of students, and some counselors' student management behaviors are also observed.

Results: Through research, it is found that the current counselors in higher vocational colleges have some problems in student management, such as backward management concepts and weak professional ability. The lack of effective supervision mechanism for counselors' ability construction in higher vocational colleges has led to the delayed improvement of counselors' management ability.

Conclusions: To sum up, the 21st century is a brand-new era. The development of higher vocational college students has undergone great changes. Higher vocational counselors are responsible for student management. They must continuously improve their management ability and professional skills and can be good at taking effective management measures in combination with the actual situation of higher vocational college students to guide the healthy growth of superior students. Higher vocational colleges and counselors themselves should attach importance to capacity building, enhance counselors' professional identity, and set a good example for students.

158 | Research on internet finance mode under E-commerce platform

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Objectives: With the gradual acceleration of the development process in the field of e-commerce, it is gradually extending to various industries, and the financial sector is also included in its extended development scope. Under the financial mode of Internet under the platform of e-commerce system, it can provide more convenient financial services for people's daily life and work, leading to a new era of financial development. In view of this, this paper mainly summarizes and analyzes the financial model of the Internet under the platform of e-commerce system, hoping to provide valuable reference or basis for relevant experts and scholars to further study this topic.

Methods: (1) Literature retrieval methods. Firstly, it searches domestic and foreign research reports, academic papers, books, magazines and collected articles related to the financial model of the Internet under the platform of e-commerce system, and systematically sorts out and summarizes and analyzes relevant research results such as the financial model of the Internet under the platform of e-commerce system. (2) Interdisciplinary research methods. In order to further study a series of problems to be faced by the financial model of the Internet under the e-commerce system platform, to have a thorough and comprehensive understanding of the financial model of the Internet under the e-commerce system platform, to participate in the exhibition and fully understand the latest research results of the financial model of the Internet under the e-commerce system platform by means of interdisciplinary research methods, so as to provide the most timely information for the in-depth study of this topic. (3) Field research methods.

Results: The financial model of Internet based on the platform of large e-commerce system is an integrated service platform integrating e-commerce, Internet and finance in the new era, which facilitates people's daily work and life. At present, the more common financial modes of the Internet under the e-commerce platform include the third-party payment mode, P2P mode, crowdfunding mode, e-commerce credit mode, financial management and sales mode of the Internet, etc. Different e-commerce financial modes have various application advantages, but there are also many risks, which need extensive attention from relevant departments and enterprises to continuously improve and optimize the operation mode.

Conclusions: There are still many deficiencies in the development of the financial model of the Internet under the e-commerce platform, and the operation model needs further innovation and optimization. Therefore, it is necessary for experts and scholars to intensify their research on this aspect, devote themselves to promoting the continuous operation and development of the financial mode of the Internet under the e-commerce platform, and actively explore the best operation and development mode and path, so as to promote the healthy development of the financial industry of the Internet under the e-commerce platform in the future.

159 | Research on the impact of the new media on college students' ideological and political education in the internet Era

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Objectives: In the new media era, educational resources are more abundant, and teaching methods are more flexible, and teaching behaviors are more scientific and efficient. Compared with the traditional education, its main manifestation is the change of "teaching efficiency, learning interest and personalized acquisition". However, we should also be aware that in the new media era, the main focus of the ideological and political education in colleges and universities is not only to grasp the skills of the new media, but also to devote ourselves to the pursuit of "Tao" in the ideological and political education. We should pay more attention to the "deep cultivation products" in order to further improve the teaching products, teaching systems, teaching services and the quality of education, and to realize the creative and transfer value of the ideological and political education in colleges and universities in the new media age.

Methods: Innovate the educational concepts and strengthening the three consciousnesses. Innovate the education subjects and establishing the network counselor system. Perfect the management system and improve the network ideological and political system. Enrich the educational contents, strengthening the subjectivity consciousness and cultivating the network quality. Seek the technical support and using the new media to promote the development of the network ideological and political education.

Results: The new media has expanded the extension of the ideological and political education and enriched the educational concepts and resources. While facing challenges, the ideological and political education of college students also ushered in the rare historical opportunities. The traditional ideological and political education is limited by various conditions, and the information collected is limited, and the contents lag behind, with a lack of appeal and persuasion, and it is difficult to achieve the desired results.

Conclusions: The Internet has brought not only the technological change, but also a change of thinking. It subverts the traditional thinking and emphasizes the user thinking, the concise thinking, the extreme thinking, the social thinking and the big data thinking. Therefore, the ideological and political education in colleges and universities should comply with the thinking changes brought about by the Internet in a timely manner, abandon the traditional, outdated and solidified teaching thinking, expand the contents of the ideological and political education with the most advanced information and the most vivid means of the Internet, establish a leading group to respond to the network public opinion, pay timely attention to the development trend of the network events, dig deep into the causes of the events, and grasp the right to speak, in order to guide the direction of the public opinions correctly, ensure the positive development of the network public opinion, and provide the organizational guarantee for the correctness of college students' moral concepts.

160 | Design and simulation of surface micro-texture of medical devices

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Objectives: In view of the characteristics of resistance reduction and wear resistance of bionic surface structures of instruments in biomedical engineering, a new tool for processing hole-to-hole strip nozzles is proposed innovatively to realize large-scale surface micro-texture manufacturing. The structure of hole-to-hole strip sprinkler based on electrojet mask processing was designed. Combining with the flow field and other parameters, the simulation analysis was carried out by COMSOL Multiphysics software. Experiments show that the structure can improve the consistency and efficiency of processing, meet the design requirements, verify its feasibility, and put forward a new idea for bionic micro-texture array.

Methods: The flow field simulation between the electrolyte inlet and the surface of the workpiece. Analysis of velocity between the electrolyte inlet and the machining region of the anode workpiece. Analysis of pressure between the electrolyte inlet and the machining region of anode workpiece.

Results: The results of flow field which were simulated by the COMSOL software indicates: utilizing the hole-to-hole linear sprinkler head based on mask Jet-ECM do electrolyte jet machining can form the stable and uniform flow field at the machining region of anode workpiece surface and form the fluid with the same velocity and pressure at ten processing holes.

Conclusions: In this paper, the surface array microtexture based on the background of medical devices is studied. Based on the simulation and experiment, the following conclusions are drawn: With 304 medical stainless steel as the processing workpiece, a mask with thickness of 30um was coated on its surface. By using photolithography and electro-hydraulic beam processing technology, the technology of "photolithography + pattern transfer" of electro-hydraulic beam was realized, and the macro-fabrication of surface Micro-Nanostructures with large area and high resolution could be carried out. The design idea of hole-to-hole direct processing was creatively put forward. Using COMSOL Multiphysics software to simulate the flow field of hole-to-hole strip sprinkler, analyzed the velocity and pressure density distribution of the beam in the corresponding processing area of the anode workpiece, and theoretically verified the feasibility and effectiveness of hole-to-hole strip sprinkler in the field of batch processing and large-scale fabrication of micro-texture with uniform morphology. The next step is to fabricate three kinds of micro-array pits on the surface of denture: circular, square and triangle, and to analyze their anti-friction and anti-adhesion effects.

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161 | Economic impact of hypertension, diabetes, coronary heart disease and stroke on rural households

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Objectives: The chronic non-communicable diseases such as hypertension, diabetes mellitus and coronary heart disease have become killers threatening the human health. With the improvement of the living standard and the change of the dietary structure, the chronic non-communicable diseases such as hypertension, diabetes and coronary heart disease are on the rise year by year. These diseases have a long course and need the long-term medication treatment, which has a serious impact on patients' social health and the quality of their life. The author studied the prevalence and the economic burden of the hypertension, diabetes mellitus and coronary heart disease in the rural residents, aiming to elaborate the necessity of prevention and treatment of the chronic non-communicable diseases.

Methods: Overview of the prevalence of hypertension, diabetes mellitus, coronary heart disease and stroke in rural areas. Research materials and methods. Resident prevalence. Analysis of patients' economic burden. Effects of hypertension, diabetes mellitus, coronary heart disease and stroke on the household economy of rural residents. Medical expenditure. Non-medical consumption. Informal system transfer income. Lower working hours and lower income.

Results: The prevalence of hypertension, diabetes or coronary heart disease was 70.22%, and the prevalence of the three diseases was 5.76%. According to the survey, the average annual outpatient expenses of patients with hypertension, diabetes mellitus, coronary heart disease or two or three diseases were 3276.51 Yuan, 3845.03 Yuan, 4211.89 Yuan, 3953.77 Yuan and 76292.17 Yuan respectively, and the average annual drug purchase cost was 1006.40 Yuan. The average annual hospitalization expenses were 11962.86 Yuan, 11319.80 Yuan, 4352.33 Yuan, 11778.79 Yuan and 21532.06 Yuan respectively.

Conclusions: The chronic diseases may affect the labor productivity and the labor supply. The labor productivity and the labor supply are also extremely important to the income of individuals and families. The health economics theory shows that because the healthy individuals have more advantages in their body and intelligence than the sick, healthy individuals produce more per unit of working time (labor productivity increases). In addition, individuals with the physical and mental health can use technology, production tools and equipment more effectively.

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162 | Downregulation of Rab23 inhibits cell proliferation, migration and invasion in prostate cancer via suppressing the sonic hedgehog signaling

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Objectives: This project is to study the effects of cyclopamine, a Hedgehog (Hh) signaling pathway blocker, on the proliferation and apoptosis of prostate cancer Dul45 cells.

Methods: DU145 cells were cultured in vitro. After the action of 10, 50, 100 μmol/L cyclohexam for 24 hours, the MTT assay was used to detect the effect of cyclopamine on the proliferation of DU145 cells. Flow cytometry was used to detect the effect of cyclopamine on the apoptosis of DU145 cells. RT-PCR was used to detect the change of Gli-1 mRNA expression in DU145 cells. Western blot was used to detect the change of Gli-1 protein expression in DU145 cells.

Results: The MTT assay showed that the cell viability of 10 μmol/L cyclopamine group (85.01 ± 2.61)%, 50 μmol/L cyclopamine group (76.71 ± 3.13)% and 100 μmol/L cyclopamine group (69.10 ± 4.11)% were lower than that of the blank control group (99.97 ± 0.21)%) (P 0.05). The flow cytometry assay showed that the total apoptotic rate of 10 μmol/L cyclopamine group (15.12 ± 0.21)%, 50 μmol/L cyclopamine group (24.97 ± 0.24)% and 100 μmol/L cyclopamine group (99.97 ± 0.21)% was higher than that of the blank control group (2.56 ± 0.28)% (P0.05). The RT-PCR results showed that the expression levels of Gli-1 m RNA in 10 μmol/L cyclopamine group (0.69 ± 0.06)%, 50 μmol/L cyclopamine group (0.69 ± 0.06)% and 100 μmol/L cyclopamine group (0.69 ± 0.06)% were lower than those in the blank control group (0.92 ± 0.11)% (P 0.05). The western blot results showed that the levels of Gli-1 protein in 10 μmol/L cyclopamine group (0.79 ± 0.06)%, 50 μmol/L cyclopamine group (0.59 ± 0.05)% and 100 μmol/L cyclopamine group (0.41 ± 0.04)% were lower than those in blank control group (0.94 ± 0.11)% (P 0.05).

Conclusions: Cyclohexamine, a Hedgehog signaling pathway blocker, can inhibit the proliferation of DU145 cells and induce apoptosis of DU145 cells. Its mechanism may be related to the down-regulation of GLi-1 expression.

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163 | Expression profiling of MiRNAs associated with the vascular remodeling in the decidual tissue of early pregnancy loss

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Objectives: This project is to screen the microarray expression profiles of miRNAs related to the vascular remodeling in the endometrial decidualization and predict the related target genes, so as to lay a foundation for the study of the pathogenesis of early pregnancy loss.

Methods: The differentially expressed miRNAs in the decidua of patients with early pregnancy loss were detected by the microarray chip, and the expression profiles of miRNAs related to the vascular remodeling were determined. The target genes of differentially expressed miRNAs were predicted by bioinformatics based on the miRWalk2.0 database. Finally, the GO-analysis and the KEGG pathway analysis of the target genes were analyzed by the DAVID database.

Results: There were 70 differentially expressed miRNAs in the decidua of patients with early pregnancy loss, 32 of which were up-regulated and 38 of which were down-regulated. The two up-regulated miRNAs with the highest multiple (≥ 2.0) were miR-125a-5p and miR-29c-3p, and the related target genes were predicted to be the vascular endothelial growth factor A (VEGFA). The target gene aggregation function is

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enriched in the positive regulation of RNA metabolism, the vascular development, the vascular system development, the positive regulation of the endothelial cell proliferation, hypoxia, angiogenesis and other molecular processes. The KEGG pathway analysis involves the mammalian rapamycin target protein (mTOR) signaling pathway and the mitogen-activated protein kinase (MAPK) signaling pathway. Cluster3.0 software was used to cluster the results of the chip. Compared with CNE-2 and CNE-2S, there were significant differences in the expression profiles of miRNAs, lncRNAs and mRNAs, which indicated that the gene expression and the regulation modes of CNE-2 and CNE-2S were quite different. **Conclusions**: The up-regulation of miR-125a-5p and miR-29c-3p in the decidual tissue of patients with the early pregnancy loss may affect the process of the endometrial decidualization vascular remodeling and participate in the occurrence of the abortion by regulating the target gene of VEGFA. To sum up, this study successfully established the expression profile of miRNAs related to the vascular remodeling in the decidua of the early spontaneous abortion, and locked the related predictive target gene, VEGFA. This result is expected to enrich the pathogenesis of the early spontaneous abortion and lay a foundation for the study of miRNAs as a new predictor of the early spontaneous abortion and a target for the diagnosis and treatment.

164 | Analysis of the influence of positive psychology on mental health education in colleges and universities

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Objectives: Under the background of positive psychology, the effective mode of mental health education in colleges and universities is the resource-oriented mode of students themselves, which serves all students and aims to help college students make full use of their advantages and resources to cope with and solve their psychological problems. Under the guidance of positive psychology, the resource-oriented mode of college mental health education, focusing on mobilizing students' potential and strength, help students find and tap their own strength, that is, making full use of the power of their positive qualities to solve their own problems. It can help students experience more positive emotions, which can promote students to build more abundant individual resources. It can help students establish positive social relations, provide effective social support for students, and comprehensively improve students' self-assistance ability. **Methods**: Pay attention to the localization analysis of positive psychology theories and continuously transform theoretical achievements into teaching methods.

Results: Positive psychology constructs the positive power of psychological educators in colleges and universities. The positive psychology advocates to make the positive explanation to questions and enable individuals to obtain the positive significance, which has a great influence on mental health educators in colleges and universities. Positive psychology enables every psychological educator to see their own virtues and advantages, establish a positive view of human nature and values, constantly develop positive emotions, pay attention to the positive side of themselves and others, and take the promotion of happiness as the main goal of mental health. Psychological educators need to adjust their working methods, shape and cultivate the positive qualities of all students, guide students to care for themselves, others and life, help students learn to accept themselves, others and society, actively cope with social problems, invest in social life and experience a happy life. The belief of psychological educators in students' positive potential and virtues is conducive to the realization of psychological health education in colleges and universities. **Conclusions**: Positive psychology puts forward that the purpose of psychological education is to grasp the psychological status of students. It not only covers students' psychological problems, but also students' positive psychology, so that students can more comprehensively grasp their own potential and advantages. On the basis of the evaluation of positive psychological quality (positive power, a good interpersonal relationship and subjective well-being, life satisfaction) in group and individual, students' positive experience can be greatly improved, students' healthy personality can be shaped, students' mental health ability can be enhanced, and ultimately good self-development and progress can be achieved.

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165 | Parthenolide regulates cell cycle expression in 786-O kidney cancer cells through tumor angiogenesis/ROS pathway

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Objectives: Parthenolide is a natural product of sesquiterpene lactones, which is isolated from medicinal plants such

as tansy and sightseeing wood. These plants are widely used in fever, deworming and anti-inflammatory. Recent studies have confirmed that parthenolide has a variety of important pharmacological activities, such as anti-tumor, anti-viral, anti-inflammatory and anti-atherosclerosis, and parthenolide is traditionally used mainly to treat migraine, fever and Rheumatoid arthritis, etc. In recent years, studies have found that small self- inulin plays an anti-cancer effect in various tumors, such as breast cancer, cholangiocarcinoma, pancreatic cancer, bladder cancer, prostate cancer, leukemia, melanoma and neurons, and has become an important research. Hot spots, the main mechanism of action is inhibition of nuclear transcription factor kappa B, histone deacetylase and interleukin-12. However, the solubility of parthenolide is poor, which limits its clinical research and application. In order to improve the water solubility and biological activity of parthenolide, a large number of modifications and modifications were carried out on its structure, and some small white chrysanthemum derivatives with excellent biological activity were found. Previous studies have shown that the Micheal addition product of a-methylene-7-butyrolactone in the parthenolide structure can increase the water solubility of the molecule and maintain or enhance biological activity. The dimethylamine derivative LC-1 is one of the successful examples, which has significant anti-tumor and good physical and chemical parameters, and has been in clinical research.

Methods:
1). Cells, reagents and instruments
2). Cell culture
3). Cell treatment
4). Measurement of intracellular ROS
5). RNA extraction and quantitative RT-PCR
6). Western blotting analysis
7). Immunofluorescence
8). Cell cycle distribution analysis
9). Statistical analysis

Results: Parthenolide can induce apoptosis, differentiation and proliferation in some types of cancer cells by inhibiting NF-KB and inducing oxidative stress. Interestingly, both pathways are associated with the final stages of megakaryocyte mutation and thrombosis.

Conclusions: Parthenolide enhances platelet production by inhibiting the NF-KB pathway of megakaryocytes independent of its induced oxidative stress response, and parthenolide enhances functional platelet production while reducing unnecessary small blood activation. It also suggests that parthenolide can directly and non-dependently enhance platelet production. In the case of antiplatelet drugs, there is also a need for a drug that reduces platelet activation while reducing unnecessary platelet activation, thereby reducing the inflammatory response. Other anti-platelet mechanisms mediated by parthenolide include changes in arachidonic acid metabolism and interaction with protein kinase C.

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166 | Influence of graded diagnosis and treatment of congenital heart disease patients on family medical economic burden

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Objectives: The graded diagnosis and treatment is an important measure to solve the problem of "expensive and difficult to see a doctor" in China. Based on the utilization model of the medical services and the CFPS (2014) data, this study empirically tested the impact of the graded diagnosis and treatment system on the family medical economic burden.

Methods: The condition and treatment of the congenital heart disease. Basic connotation of the graded diagnosis and treatment system. Grading diagnosis and treatment system for the congenital heart disease patients. Grading diagnosis and treatment model for congenital heart disease. Basic framework of the cardiac rehabilitation system under the graded diagnosis and treatment model. Information guarantee of the cardiac rehabilitation system under the graded diagnosis and treatment model. The effect of the graded diagnosis and treatment of the congenital heart disease on the family medical economic burden.

Results: The results showed that the first visit at the grass-roots level could significantly reduce the financial burden of the family medical care, especially for residents with chronic diseases and hospitalization experience. The proportion of the medical expenses reimbursement is very important to reduce the medical economic burden of residents, but the effect of the construction of the grass-roots medical institutions is not significant. Suggestions and countermeasures are to cultivate and enrich the family doctor team, and guide residents to first visit at the grass-roots level.

Conclusions: At present, the construction of the cardiac rehabilitation system under the mode of the graded diagnosis and treatment is in its infancy. It needs to be developed and perfected. We should accumulate the experience, innovate the service flow and implement the graded diagnosis and treatment system. It is also more conducive to the fine

management of the patient services and the entire process management of the hospitals and doctors. Therefore, the construction of the cardiac rehabilitation system under the mode of the graded diagnosis and treatment will provide the best service for the local people.

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167 | Clinical observation of the antibiotic step-down therapy for children with severe pneumonia

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Objectives: This project is to study and analyze the clinical effect of the antibiotic ladder reduction in the treatment of the severe pneumonia in children, and summarize the experience of the treatment, so as to provide reference for the clinical practice.

Methods: The clinical data of 60 children with the severe pneumonia admitted to our hospital from June 2012 to October 2014 were selected as the research objects and retrospectively analyzed. In addition, according to the order of the admission, the children were randomly divided into the treatment group and the control group, 30 cases in each group. Patients in the control group were treated with the conventional antibiotics, while those in the treatment group were treated with the antibiotics downgraded. The effects of different treatment methods were compared between the two groups.

Results: Children with the severe pneumonia are generally younger, and their respiratory and circulatory functions are not perfect, and their immunity is weak, and the risk of the complications such as the heart failure is higher. If rescue is not timely or the treatment is improper, it can cause death of children. In the past, the antibiotic therapy of "escalating generation by generation and attacking separately" was mostly used. That is, the mild antibiotics were used in the initial stage of the treatment, and the broad-spectrum antibiotics were used after the disease deteriorated or the sputum culture results were upgraded. However, the clinical practice showed that the antibiotic escalation therapy had poor effectiveness in controlling the infection, the long treatment cycle, the long-term and large-scale use of antibiotics and was liable

to lead to imbalance of the organism flora or the pathogenic bacteria drug resistance.

Conclusions: Meropenem is a new type of the carbapenem antibiotics. Its mother nucleus is the carbapenem ring, which can effectively improve its affinity with the target proteins on the bacterial cell wall, enlarge its antimicrobial spectrum and enhance its bactericidal ability. Meropenem has a strong antimicrobial effect on most Gram-negative bacteria, Gram-positive bacteria, anaerobic bacteria and aerobic bacteria, but it will not cause serious problems and symptoms. The results showed that the marked and total effective rates of the observation group were significantly higher than those of the control group. Meanwhile, the antibiotic use time and hospitalization time of the observation group were significantly shorter than those of the control group, which indicated that the antibiotic step-down therapy for the severe pneumonia in children had good clinical effect and was worthy of popularization and application.

168 | Application of the aspiration catheter in the emergency percutaneous coronary intervention for patients with acute myocardial infarction

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Objectives: This project is to evaluate the feasibility and effectiveness of the aspiration catheter in the emergency percutaneous coronary intervention (PCI) for patients with acute myocardial infarction.

Methods: 30 patients with the acute ST-segment elevation myocardial infarction undergoing the emergency PCI were divided into two groups, 15 patients in each group. The aspiration catheter group: The immediate stent implantation or the selective stent implantation was decided according to the thrombus load after the aspiration of the aspiration catheter. The direct PCI group was implanted after the balloon dilation alone. The TIMI blood flow grading was compared between the two groups immediately after the operation, and the peak values of the creatine kinase (CK), the creatine kinase isoenzyme (CK-MB), the troponin T (cTnT), the high-sensitivity C-reactive protein (hs-CRP), the brain natriuretic peptide (BNP) and the D-dimer were compared before and 2 hours after the operation.

Results: 13 patients in the suction catheter group underwent the stent implantation after the catheter aspiration, and TIMI blood flow reached TIMI level 2-3, and only 2 patients had no reflux phenomenon. 8 patients in the direct

PCI group had no reflux phenomenon after the stent implantation ($P < 0.05$), and there was no significant difference in CK, CK-MB, cTnT, hs-CRP, and D-dimerl between the two groups before the operation ($P > 0.05$). After the operation, the following parameters in the suction catheter group were significantly reduced compared with those in the direct PCI group, and the peak ratio was 2 hours after the operation: CK(2152.71 ± 297.84): (3550.9 ± 566.54)IU/I, $P < 0.05$; CK-MB (203.85 ± 23.06): (322.85 ± 46.01) IU/L, $P < 0.05$; cTnT (4.46 ± 0.93):(7.71 ± 1.19)ng/ml, $P < 0.05$; hs-CRP(7.25 ± 1.06):(15.27 ± 3.22)mg/L, $P < 0.05$; BNP(1441.75 ± 321.83):(4589.75 ± 1388.7) pg/ml, $P < 0.05$; D-dimer(134.53 ± 40.15):(245.43 ± 50.15)ng/ml, $P < 0.05$.

Conclusions: The application of the DiverCE suction catheter in the emergency PCI for the acute myocardial infarction can reduce the incidence of the no-reflow in patients with the acute myocardial infarction and improve the reliability and safety of the stent implantation, which is effective and safe.

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169 | The influence of testosterone supplement treatment on lipid profile in males: a meta-analysis of randomized placebo-controlled trials

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Objectives: To conduct a meta-analysis of placebo-controlled randomized trials to evaluate the effects of testosterone supplement therapy (TST) on lipids as well as other metabolic outcomes in men.

Methods: We retrieved objective studies that met the inclusion criteria: randomized placebo-controlled double-blinded clinical trials on males who had been administered testosterone or its esters in supplement doses. The outcomes of each study were required to include lipid parameters. Exclusion criteria: contraindications of testosterone supplement therapy, such as untreated sleep apnea, increased haematocrit, prostate disease, and anabolic or testosterone therapy during the previous year. Hypogonadotropic hypogonadism was excluded either. Studies which applied androgens instead of testosterone were not covered. Studies using other hormones and drugs simultaneously, for example, growth hormone, glucocorticoid, finasteride or sildenafil, were excluded. Studies on HIV-infected patients were not included. Neither studies with human chorionic gonadotrophin (hCG) or clomiphene nor those prepared with 17-alkylated androgen or oxymetholone were included. Multidose RCTs were excluded. Studies which did not analyze interesting outcomes were not enrolled.

Results: For determination of changes in each of TC, LDL and HDL cholesterol and TG levels, four studies which summarized the related RCTS were performed. TC meta-analysis included 19 RCTs and 1,668 patients (849 for TRT and 819 for control), LDL meta-analysis included 17 RCTs and 1,632 patients (832 for TRT and 800 for control), HDL meta-analysis included 16 RCTs and 1,590 patients (815 for TRT and 775 for control) and TG meta-analysis included 15 RCTs and 1,578 patients (808 for TRT and 770 for control). The combination of TC, LDL and HDL analyses resulted in large inter-trial heterogeneity. Therefore, we performed sensitivity analysis and stratified analyses to explore the heterogeneity. The results of the stratified analyses and sensitivity analysis are listed in Table 3. There was a significant correlation between lipids and TRT. There was insufficient interstudy heterogeneity following HETRED analysis and subgroup analysis.

Conclusions: TST improved the lipids profile, with a significant decrease in total cholesterol (TC) and triglycerides (TG) but did not affect low-density lipoprotein (LDL) or high-density lipoprotein (HDL). Additionally, TRT was correlated with fat mass (FM) and lean body mass (LBM). Improvements in lipids levels were more pronounced with intramuscular testosterone than with transdermal or oral testosterone. No increase was found in cardiovascular or other serious events among men with testosterone supplement therapy.

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170 | Modal separation method based on the rearrangement time-frequency spectrum and the vold-kalman filter and its application in the ultrasonic nondestructive testing

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Objectives: The ultrasound nondestructive testing technology has become an important method and means of the

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modern product quality detection and control because of its wide range of the tested objects, the large detection depth, the accurate defect location, the high detection sensitivity, and the fast speed, which is harmless to the human body and easy to use on site. The traditional ultrasonic testing technology is mainly based on the analysis of the propagation time and the echo amplitude of the ultrasonic wave to obtain the information about the medium characteristics. Because only a small part of the large amount of the information contained in the waveform is used, the application scope of the ultrasonic testing technology is greatly limited, and the reliability of the testing results is not high, and there is certain subjectivity.

Methods: The time-frequency analysis of the received frequency-hopping signal is an important step in the parameter estimation of the frequency-hopping signal. The rearrangement method is used to rearrange the time-frequency spectrum of the signal, which effectively suppresses the cross-interference term, improves the time-frequency aggregation of the signal and improves the readability of the time-frequency spectrum of the signal. By rearranging the Gabor spectrum of the frequency hopping signal, the frequency hopping period, the time and frequency of the frequency hopping signal can be estimated under the condition of the low signal-to-noise ratio. The simulation results show that, compared with the Gabor spectrum method, the rearrangement Gabor spectrum method is used to analyze the frequency hopping signal, which improves the accuracy of the frequency hopping period and hopping time estimation of the frequency hopping signal.

Results: At present, most of the widely used ultrasonic detection technologies are based on the ultrasonic body wave. Because of the propagation characteristics of the ultrasonic body wave, the point-by-point detection of structures is needed, which has the disadvantages of the low detection efficiency and the high cost. At the same time, the point-by-point scanning detection method also limits its application in the field of the structural health monitoring.

Conclusions: The ultrasound-guided waves are the stress waves propagating along the structure interface formed by the reflection and superposition of the body waves at the structure interface. Compared with the body wave, the ultrasonic guided wave has the characteristics of the small attenuation and the long propagation distance, which can realize the fast non-destructive testing of the large structural parts with the regular shape, and has the potential of the online application, and can be used as a technical means of the on-line structural health monitoring.

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171 | Application of microbial catalysis in synthetic drugs

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Objectives: Emerging with the emergence of human beings, drugs have been helping people with the struggle against diseases. After a long period of exploration, the discovery and manufacture of drugs have become increasingly scientific, and now people have mastered a variety of methods to obtain drugs. Microbial catalysis is undoubtedly the most important, economical and efficient method in pharmaceutical industry. Compared with chemical catalysis (especially some heavy metal catalysts), it has mild reaction conditions and can produce more refined synthetic drugs.

Methods: Filamentous fungi, yeasts and bacteria to be screened were respectively inoculated in medium, yeast culture medium of filamentous fungi and bacteria medium in 30°C, 160 r/min in the table for 48 hours. One part culture medium was mixed with three parts water, and add hydroquinone and maltose or sucrose into it, thus to make the final concentration of hydroquinone and sugar respectively 50 mmol/L and 150 mmol/L, and make it converse in 160 r/min in the table at 30°C for 72 hours.

Results: The results are shown in table 1-3. The results revealed that the ability to catalyze the synthesis of arbutin was very common among microorganisms. From the general situation of the three categories of microorganisms, the ability of filamentous fungi to synthesize arbutin was the strongest, followed by bacteria, and the worst was yeast.

Conclusions: The ability to catalyze and synthesize arbutin was tested in 67 strains of microorganisms, including the filament fungi, yeast and bacteria. As a result, the ability to catalyze and synthesize arbutin was very common in microorganisms. More than 70% of the detected microorganisms could catalyze and synthesize arbutin to varying degrees. Among them, the strongest were Rhizopus sp. PL22, Rhizopus sp. PL24, Rhizopus sp. PL25, Rhizopus sp. R2, Aspergillus ficuum AS3.324, Aspergillus niger CICC2169 and Aspergillus niger PL04. The arbutin synthesized with maltose as glucosyl donor was 1.3591, 1.8031, 1.3628, 1.4832, 1.5694, 0.9241 and 1.3099 g/L conversion solution respectively. And arbutin synthesized by most microorganisms is β-configurational, and arbutin synthesized by a few microorganisms, such as aspergillus oryzae which is α-configurational.

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172 | Occupational psychological health and safe exercise in highway

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Objectives: In the process of highway transportation, the factors that affect the safety of drivers mainly include: the driving skills of drivers, the degree of compliance with traffic safety laws and the state of drivers' psychological and physiological health. This paper focuses on the important influence of drivers' psychological health status on highway safety performance, including driving habits, psychological emotions, personality and concentration, etc., and puts forward methods of psychological health regulation to improve the ability and level of safe driving.

Methods: Corresponding mental health adjustment methods: first, automatic adjustment, cultivate emotional stability, learning to divert attention. Second, the goal seeks, the positive self-suggestion, broadens the interest. Third, reasonable catharsis. Fourth, physical and mental relaxation. Specifically speaking: learn to talk and learn to love yourself.

Results: Safety psychology is to use the principles, laws and methods of psychology to solve the safety problems related to people's psychological activities in the process of labor production. The aim is to reduce casualties in production. Human safety, including physical and psychological safety, is affected by natural environment, social environment, safety rules and regulations, and interpersonal relationship. In the transportation practice, the driver's psychological factor plays an important role in the safe exercise, because the vehicle is driven by a person. Man is governed by his mind.

Conclusions: The main inducement of bad psychological emotion of drivers is conformity psychology, fluke psychology, performance psychology, paralysis, mental fatigue, blind confidence, excitement and frustration, irritability and so on. Drivers encounter emergency (sudden) situations will appear: fear, anxiety, excessive anxiety, consciousness is not clear, confusion, anger, anger, emotional and other psychological characteristics. Often appears the stress response handles the question improperly: turns excessively, avoids without thinking, forgets the emergency braking, does not know what to do and so on.

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173 | Construction and practice of the quality evaluation system for medical postgraduate tutor guidance

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Objectives: The medical degree postgraduates implement the "two-track in one" training mode, and tutors play a driving role in the training system. How to form a systematic, standardized and rational training mode needs constant adjustment and joint efforts of all parties in the training process. Based on the analysis of the tutors' guidance to the graduate students, this paper establishes the performance evaluation index system of different types of graduate tutors' guidance, integrates the relevant data in the expert consultation paper of the weight setting with the analytic hierarchy process, determines the weights of each evaluation index for evaluating the academic and professional graduate tutors' guidance performances, and constructs the multilevel fuzzy comprehensive evaluation model for the tutors' guidance performances on this basis.

Methods: Practical activities of constructing the quality evaluation system of the medical postgraduate tutor guidance. Data sources. Model method. Scale analysis.

Results: Investigations and researches show that the medical doctors with the excellent post competence can better complete their daily medical work, pay attention to the development of their own disciplines while working, be willing to learn the new technical means, actively contact the frontier research materials, continue to pursue improvement of their working methods, combine with the accumulation of the medical work experience, and regurgitate their medical work through the scientific research results. This paper evaluates students' scientific research abilities and academic levels from the aspects of the quantity and the quality of the scientific research achievements, and the integrity and innovation of the experimental records.

Conclusions: Under the new situation of deepening the reform of the clinical medical personnel training in collaboration with the medical education, the educational reform of the medical master's degree is constantly advancing, and the close connection between the medical master's degree training and the resident standardized training is becoming an important part of the medical personnel training system with Chinese characteristics. The purpose of this study is to develop a comprehensive evaluation index system for the quality of the postgraduate tutor training to adapt to the new situations, and to provide a scientific tool for evaluating and improving the quality of the medical personnel training.

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174 | Construction and practice of music education professional personnel training model under the background of the big data

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Objectives: With the arrival of the era of the big data and under the background of the comprehensive application of the Internet, the society has put forward new requirements for the college talents, which to some extent increases the educational burden of colleges and universities. In the future development of our society, all-round talents will be more in line with the needs of our society. Exploring the training mode of talents in higher vocational colleges is a realistic need for higher education to actively adapt to the current economic development. Therefore, in the process of the teaching in colleges and universities, through the integration of the production and education, students are trained to be comprehensive talents needed by the society, which has become the current personnel training mode of our teaching in colleges and universities.

Methods: The big data contains tremendous scientific and social values, which permeate all aspects of the society and have a profound impact on the higher education, and promote the development of the music education. In the era of the big data, there are three opportunities for the music education: the opportunity for the orientation of the music education, the opportunity for the concept of the music education and the opportunity for the method of the music education.

Results: The big data as a technological revolution uses the massive data information, mining the data resources. The large amount and the variety of the data are the most prominent characteristics of the big data, but the relatively low value of the data is also an urgent problem to be solved. The fast information processing and the high timeliness are the remarkable characteristics that distinguish the traditional data. Many music enthusiasts use the big data to publish the music materials to the music social platforms. Net-Easy Cloud Music, QQ Music, Shrimp Rice, National K Song, Tremble and Douban, Sina Microblog, We-Chat and other

social networking sites, as well as the social networking or video sites such as Facebook, YouTube, Instagram and Twitter abroad, are relatively well-known in China for the music sharing and communication.

Conclusions: Both in our teaching, our work and in our daily life, although many people are not familiar with the exact definition of the big data, it has been deeply affected by the big data. Music educators should gradually realize the importance of the big data websites for education. Some designers have designed their own resource platforms based on the big data websites, and associated them with the big data websites to serve our music teaching.

175 | Application of the computer technologies in promoting the traditional cultures

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Objectives: At present, with the development of computer technologies and the popularization of the modern Internet, the application of computer technologies is more extensive, which is the progress of the times and the development needs of our society. The same excellent traditional culture is also a part of promoting the development of our society. The combination of the computer technologies and the traditional cultures can quickly display and promote our excellent cultures, and at the same time, the combination of the computer technologies and the traditional cultures and its cultural informationization undoubtedly play an important role and significance in promoting our excellent cultures, and building a strong cultural country and a large cultural country.

Methods: Application strategies of the computer technologies in promoting the traditional cultures. Using the computer technologies in the school education to inherit our excellent cultures. Enterprises actively participate in the inheritance of the excellent cultures and renew the modern communication channels of the cultural inheritance. Inheritance of the traditional cultures by technologies.

Results: For many years, we have been deeply engaged in the field of the traditional culture, devoted to inheriting and carrying forward the Chinese traditional cultures. Starting from the cultural gene of the Chinese people, we have integrated our Chinese wisdom into the technological researches and development, and created the AI robots suitable for our Chinese people. Culture is invisible, and it is difficult to measure it by a visible standard. However, to make the culture fall to the

ground, it is necessary to guarantee the use value of products. Therefore, it is necessary to improve the "accuracy" of the traditional cultures.

Conclusions: China is one of the four ancient civilizations. It has a splendid culture of 5000 years and has made important contributions to the inheritance and development of the human civilization. Once the charming Chinese culture has overwhelmed countless neighboring countries and become the object of imitation all over the world. Up to now, many excellent cultures in many countries have the imprint of the Chinese traditional cultures. The Chinese traditional culture is the summary of predecessors' thinking about life, their observation of nature and their moral sentiment. It integrates the outlook on life, values, nature and sentiment in Chinese traditional cultures, shining with the brilliant wisdom of the ancients, and is our precious historical wealth. With the development of our society, the intelligent information technology has been widely developed in various industries. It is necessary to vigorously advocate the application of the intelligent information technology in the traditional cultural industries so as to better inherit and develop the essence of our national cultures.

176 | Research on the professional growth of physical education teachers

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Objectives: At present, the professional development and growth of P.E. teachers in our country are still in the embryonic stage. There are many achievements, but they are mainly characterized by the experience summary and supported by the pedagogical theory, lacking the professional consciousness of the P.E. education. To strengthen the research on the students, the teachers' cultures, and the physical education teachers' own scientific research training and cultivation is the direction that the physical education teachers will continue to work hard. In the future research, we must realize that the professional development and growth of physical education teachers is a dynamic process, and restricted by the external environment. We should combine the development needs of the physical education teachers with their professional needs, and make a developmental evaluation of the teachers.

Methods: Analysis of the constituent elements of the professional growth of the physical education teachers. Elements affecting the development of the physical education teachers' professional qualities. Analysis of the professional growth requirements of the physical education teachers. The choice

of the ways of the professional growth of physical education teachers.

Results: Qualities and abilities are all the growth factors. The vocational requirements for teachers' comprehensive qualities and professional abilities always maintain an advanced and developing basic situation, which is the key to improve their teaching quality and the theoretical core of teachers' sustainable development. The concept of the comprehensive training is a correction to the idea that the teacher training was regarded as a kind of the professional training in the past. The concept of their comprehensive cultivation is mainly aimed at the purpose and contents of the cultivation to improve the quality of the teachers, which are also the essential contents and primary tasks of the physical education teachers' cultivation.

Conclusions: In the process of the development of sports, new sports items, sports equipment, and sports rules and so on are constantly emerging. As a teacher, we must first master these new sports knowledge and skills, in order to better teach students. Therefore, we should strengthen the professional knowledge training of the physical education teachers, so that they can understand the development of sports and grasp the context of the sports development, so as to better carry out the physical education and teaching practice and the training of teaching skills.

177 | Research on the Application of Foot 3D Scanning Technology in the Mass Customization of Footwear

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Objectives: There are many changes in the footwear pattern with the trend of popularity. For the sake of popularity, wearing shoes that do not fit the feet often cause permanent injury to the feet. The purpose of this study is to use reverse engineering technology to capture the important dimensions of the consumer's foot, and to develop a set of custom-made shoes design system to meet the customer's foot type design goals. First, using the self designed three dimensional optical reverse foot scanning measurement platform to obtain the customer's foot shape stereo point data, and then through the cross section difference analysis and comparison algorithm proposed in this study, the foot type point data and the database standard three dimensional shoe last model are calculated and compared, to find the difference between the two and produce the custom-made suggestion value for the consumer foot type. Through the use of the interface designed by this system, consumers can understand

the difference between the individual foot type and the standard shoe last one by one through the display content of each interface in the process of operation. Finally, consumers can choose their favorite styles and colors, and the virtual prototyping technology, through the network and interactive dynamic display, presents the final results.

Methods: In this study, a non-contact reverse engineering measurement system was used to scan the individual foot type and to compare and analyze the difference between the measured and the standard shoe last in the cross section with the pattern difference analysis algorithm. Due to the processing of raw scanned digital data, the best data value and minimum error can be obtained, and the algorithm has good practicability and correctness.

Results: Compared with the related methods mentioned in the literature discussion, the comparison algorithm used in this study can be used to capture and analyze the digital data of the cross section directly against the shoe last and the 3D foot of the measured person at the same time. The better results and the shoe style design concept for the foot type can be obtained in the speed and accuracy of the processing.

Conclusions: In the course of the experiment, according to the experimental data, there is a problem of the size difference between the two feet. In order to solve this problem, the concept design of this research is designed, the concept of the design of the fast custom-made shoes is the starting point and the modular design of the assembly concept is used to provide a more suitable choice for the consumers to find out the interior space matching the shoes most suitable for the foot type. Set up shoes that are really suitable for everyone.

178 | Research on the "Two-step" spherical hinge sealing technology for the down-turning cap-turning system

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Objectives: The sealing quality of the spherical hinge of the downward swivel cap directly affects the overall quality and life of the bridge, while the high-speed railway requires the high durability of the structure. Taking the Tongliao-Passenger Dedicated Railway Bridge over Changshen Expressway as an example, by comparing the optimized construction technologies with the traditional construction technologies, this paper introduces in details the construction technology of the spherical hinge blocking concrete through the comparison of the optimized construction technology with the traditional construction technology. After studying and optimizing the traditional construction technology of the hinge-sealing concrete, the "two-step" construction technology is put forward, which reduces the construction machinery and manual input, and achieves the desired results through testing.

Methods: Overview of the construction design of the downward rotation. Contrast of the construction technology. Traditional construction technology of the sealed concrete. Construction technology of "two-step method" for consolidating concrete. Process comparison and selection. Construction technology of "two-step method" for the spherical hinge sealing. Construction preparation of the sealing hinge. Closed gap between the slide-way and the steel support foot. Layout of the grouting bellows and the grouting pipes."First step" casting of the hinged concrete. Remaining concrete secondary seal hinges. Quality inspection of the sealed concrete. Notes and control points. Problems and countermeasures in the construction process. Improvement of the follow-up construction through the construction of this project. Efficacy analysis.

Results: After the comparison and selection of the construction period, the construction technology of "two-step method" is 7 days ahead of the traditional construction technology. The main reason is that after the completion of the "first step" concrete pouring according to the construction technology of the "two-step method", the suspension frame of the closure section can be installed and slipped into place, which greatly shortens the construction time of the closure section, relieves the pressure of the construction period, and saves the manpower and the mechanical input.

Conclusions: Through the "two-step method" construction technology, adding the grouting and mud-jacking processes can ensure that no voids are left inside the sealed concrete, ensure the construction quality of the sealed concrete and eliminate the unpredictable hidden dangers. The quality benefit of this technology is the most practical and reliable, which provides a favorable basis for the future construction of the downward turning cap to seal concrete.

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179 | The impact of the computer-assisted environment on english second language acquisition teaching from the perspective of constructivism

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Objectives: The computer-aided English teaching system (CAEI) is the CAI software designed and developed on the basis of the relevant research. The CAEI system

includes three subsystems: the general English teaching subsystem, the English special subject teaching subsystem and the English practice testing subsystem. Each subsystem has three environments: the courseware writing environment, the teaching environment and the management environment. These environments are implemented by the corresponding functions. Firstly, the characteristics of the language teaching and CALI are analyzed, and the concepts of the division of the general teaching and the special teaching, the division of teaching and the practice testing are put forward. Based on this, the overall system structure of CAEI is designed. Then, the design objectives, functions and structures of each subsystem are described separately, and a concrete understanding of the CAEI system is established.

Methods: The impact of the computer-assisted environment on the English second language acquisition teaching from the perspective of constructivism. Experimental design of the impact of the computer-aided environment on the second language acquisition. The relationship between the computer-aided environment and the English second language acquisition teaching.

Results: According to the statistical data, whether for the non-foreign language majors or the foreign language majors, the average assessment results obtained by the learners with the computer-aided environment method are better than those with the traditional foreign language teaching.

Conclusions: To sum up, in the foreign language teaching based on the network environment, its rich multimedia teaching resources basically meet the needs of different learners in the second language acquisition. In addition, the foreign language teaching under the network environment can provide the man-machine dialogue exercises in different scenarios, which meets the basic needs of the language output link of the basic mode of the second language acquisition. Finally, this paper compares the scores of ten classes under the two modes of the foreign language teaching and the traditional foreign language teaching under the network environment. It can be concluded that learners can achieve better results by using the foreign language teaching based on the network environment.

180 | Research on the data mining of public opinions of college students' network behaviors

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Objectives: With the continuous expansion of the influence of the information social platforms, public opinions are no longer only around celebrities. As an important group of our society, the fermentation of public opinions around college students has gradually become the status quo. The network behaviors of college students under the fermentation of public opinions deserve our attention. The research of this paper is based on the data mining of the network behaviors of college students, to study the influence of public opinions brought by the network behaviors of college students, and to study the topic types of college students' public opinions.

Methods: This study uses the data mining research of college students' network behavior public opinions to analyze the impact of college students' network behaviors on public opinions, to understand the types of the public opinion topics that college students are concerned about and the types of public opinions that college students can trigger, and to understand the interaction between college students and public opinions in the new media era.

Results: To sum up, with the support of the network crawler technology, college students' network behaviors will have a variety of impacts on the development of public opinions.

Conclusions: From the analysis of the relationship between the subjects and the objects of University Students' public opinions, when college students or college student groups are the main subjects of public opinions, the contents of public opinions will have different degrees of impact on our society, and the nature of the impact depends on the way in which the content affects our society. When college students are the guests of public opinions, college students' network behaviors will push forward, guide, promote or negatively affect the development of public opinions. It can be seen that college students' network behaviors can effectively affect the development of public opinions. As an important educational place, colleges and universities should regulate college students' network behaviors. In the process of tracing college students' network behaviors by using the crawler technology, it is also found that many students' network moral quality is poor, and that their network behaviors are not standardized, and some college students will be exposed to vicious words and sarcastic languages or behaviors. Colleges and universities should standardize college students' network behaviors, so that college students' network behaviors can play a real positive role in the development of public opinions and let college students disseminate correct values and concepts through network behaviors.

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181 | Exploring the strategies of green architectural design of museums in colleges and universities

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Objectives: With the continuous development and popularization of the higher education in recent years, the scale of the college enrollment is also expanding. With the increasing number of students in colleges and universities, the importance of university museums, an important building to help teachers and students learn, is also increasing in their construction and design. University museums are one of the most important buildings in universities, and they are also important energy-consuming buildings. In this regard, in order to better reflect the green environmental protection, this paper briefly analyses the basic strategies of the green architectural design for university museums, hoping to provide some help for the relevant workers.

Methods: The importance of the green architectural design. Basic strategies of the green architectural design in the architectural design. Basic principles of the green architectural design of university museums. Green architectural design Strategy of university museums. Optimum design of the building foundation. Integrated application. 1. The ventilation design. In the aspect of the air-pulling well, the flat glass is the main external part of the air-pulling well. 2, building location. According to the geographic environment characteristics of the building. 3. New energy design. 4. Rainwater utilization design.

Results: The application of the green building design in the architectural design is very important. The rational application of the ventilation and the solar energy resources is very important. It is an effective way to improve the design efficiency.

Conclusions: In summary, the green building design has a high application value in the field of the architecture, and it involves many technologies. In the application, we need to explore the performances and functions of the buildings through the application of the corresponding technologies in different specialties, highlighting the development role of ecology, climate, environmental energy conservation and sustainability. At present, a large number of the green buildings need to constantly explore and pursue all kinds of the green schemes, the application of the green and energy-saving construction materials, and the low environmental pollution construction technology to highlight the green characteristics, to achieve the low pollution, the low energy consumption, the low cost, and the high-benefit architectural design.

182 | Development of sports dance curriculum based on the human engineering

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Objectives: The development and construction of the sports dance curriculum resources have a very positive role in promoting the development of the current sports education and the quality education activities, contributing to the continuous improvement of the quality of our sports teaching, and promoting the all-round development of students' physical and mental qualities. Therefore, we should develop and construct the sports dance curriculum resources according to the time and the local conditions, formulate the scientific resource development and construction plans, and improve the breadth and depth of the sports dance teaching, so as to promote the sustainable development and continuous innovation of the sports curriculum resource system. The early human engineering mainly studied the relationship between man and the construction machinery, that is, the man-machine relationship. Its content includes the human structure size and the function size, the operating device, and the visual display of the control panel, which involves psychology, human anatomy and anthropometry, and then studies the interaction between humans and the environment, that is, the human-environment relationship, which involves psychology and environmental psychology and so on. So far, the content of the researches on the human engineering is still developing and not uniform.

Methods: Expanding the existing sports curriculum resources. Development and inheritance of the folk dance resources according to the local conditions. Effective integration of the sports dance curriculum resources.

Results: According to the connotation of the human engineering, the psychophysical measurement and the physical method are used to determine the minimum stimulus of the human nerve and the minimum difference of the sensory stimulus. Scale method: In order to divide the measures in the psychology, such as the dividing lines on a straight line, can be orderly calibrated by experts or the ordinary people, corresponding to the beauty, the old and the new, the advantages and the disadvantages of the evaluation.

Conclusions: In order to achieve the best effect in the development of the sports dance curriculum, we must give full play to the value connotation of the human engineering. The human motion field measured by various measuring methods is also the basic data of the human engineering. If the scale of the human body is the static and relatively fixed data, the scale of the human motion field is dynamic. Starting from meeting the needs of students' exercises, setting a reasonable state of the activity scenario can really stimulate and mobilize

the enthusiasms of students to participate in the sports dance curriculums.

183 | Research on PID adaptive robust control algorithm based on the chaotic neural network model

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Objectives: The adaptive control problem of a class of the nonlinear uncertain systems is studied by using the nonlinear approximation property of the neural networks. The controller directly utilizes the output of the neural network and designs an online adjustment algorithm of the weight matrix of the neural network. By normalizing the uncertainties, the structure of the controller is simplified, and the control is proved under the assumption that the uncertainties are weak. The controller makes the state and the approximation error of the controlled system uniformly and ultimately bounded. Finally, the control problem of the water tank system is simulated by an example, which shows that the method adopted is effective.

Methods: PID adaptive robust control algorithm based on the chaotic neural network model. Parametric adaptive fuzzy PID control structure. Basic steps of the RBF neural network participating in the parameter adjustment of the PID controller.

Results: The comparison of the above MATLAB simulation results can verify that the BP neural network PID controller can control the data packet loss to a certain extent when there is the data packet loss in the networked control system, so that the output of the system is stable, and the control accuracy is improved, and the robustness is enhanced.

Conclusions: The neural network adaptive control is mainly used to solve the control problems of the complex non-linear, uncertain and unknown systems. On the one hand, because of the great role and the potential of the neural networks in the adaptive control, people urgently need to develop the practical neural control systems to meet the needs of the engineering practice. On the other hand, the basic theoretical research of the neural adaptive control systems is seriously lagging behind, and some important theoretical issues, such as the stability criteria, and the engineering design methods based on the stability and robustness, are almost complete. No research has been carried out. The existence of this phenomenon will seriously restrict the further application and development of the neural network in the field of control. Therefore, the research on the stability and robustness of the neural adaptive control system is not only of great theoretical significance, but also of great significance to promote the development of the automation technology and improve the research level in the field of the artificial intelligence.

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184 | Research on the database related copyright issues

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Objectives: With the rapid development of the Internet technology, the use of the information resources has been unprecedented development. By explaining the definition and functions of the database, the current situations and the copyright problems of the database operation industry in China are introduced. According to the principles of solving the copyright problems of the database operation enterprises, some strategies and suggestions are put forward.

Methods: Definition and functions of database. Definition of database. Functions of database. Development status of the database information resources. Copyright problems and reasons of the database information resources. Copyright issues. Reasons for the copyright problems. Implementing unscientific copyright acquisition strategies and solutions by the database operators. Principles of solving the copyright in the database operating enterprises. The principle of strictly abide by the legality. The principle of the efficient economy of the copyright acquisition. The principle of sharing. The principle of maximizing benefits. Relevant strategies for the database operating enterprises to resolve the copyright.

Results: Neglecting or injuring the interests of the copyright owners. Incomplete or invalid copyright obtained. Difficulties in obtaining or paying the large amounts of the copyright. Imperfect laws and regulations concerning the copyright. The database operator's own concept of copyright is backward. Industries participate in the formulation of the

relevant laws and regulations. Establishing multiple ways of the copyright acquisition and payment. Strictly crack down on the copyright infringement.

Conclusions: The database with the information technology and the Internet technology also plays a very important role in inheriting and protecting the traditional cultures, preventing the cultural invasion and infiltration, and eliminating the information gap with the developed countries. Due to the excessive ownership of the copyright involved, the strategies designated by the database operators for the copyright acquisition are often unscientific, which will often lead to omissions or invalidity in the copyright purchase, resulting in the risk of the infringement. By searching and using the database, more information can be disseminated by the copyright owners, and other relevant copyrights of the copyright owners can also benefit.

185 | The significance of network art resources to the art education in colleges and universities in the big data era

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Objectives: By analyzing the changes brought about by the big data era to the current education in China, this paper expounds the role of learning art education for students, and finally puts forward innovative ideas of our art education.

Methods: By analyzing the significance of the network art resources to the innovation of the art education in colleges and universities in the big data era, the present situation of the art education in the big data era and the significance of the network art resources to the art education in colleges and universities in the big data era.

Results: The educators of the art education need to deeply understand that in the current era of the big data, the art curriculum must be expanded in various forms, in order to bring students rich knowledge contents, and promote students to absorb and accept diverse cultures and skills in all aspects. Teachers can help students to practice the curriculum. When students receive the art education, they not only need some basic skills of the painting education, but also need to be able to transform the knowledge they have learned into their own abilities and apply it to the existing life. At the same time, they also lay a good thinking foundation for the future work and life, and improve their practical abilities. Through the

analysis of the educational data, we can understand the insufficiency and actual needs in the development of our education, and then formulate the educational policies with a definite aim, and formulate more realistic educational strategies, so as to use the concept of the big data and the statistical thinking to plan for the future.

Conclusions: In the era of the big data, the high-quality school art curriculum and teaching increasingly combine the media technology with the art knowledge and skills. It is worth mentioning that in the era of the big data, students have few technical bottlenecks in using the digital cameras, digital video cameras, computer software, and the network and so on. They are passionately and quickly engaged in the creative activities and can last for a long time. Their artistic and media literacy and comprehensive abilities can be significantly improved.

186 | Study on safety production and risk control in enterprise of vehicle maintenance and repair

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Objectives: In recent years, with the rapid development of China's social economy, the automobile industry has developed rapidly, thus promoting the expansion of the automobile maintenance industry. In order to provide a safer and more comfortable ride, this article focuses on the safety production and risk control in Enterprise of vehicle maintenance and repair, and focuses on the in-depth analysis and research of various safety risk problems and solutions in production in Enterprise of vehicle maintenance and repair. It is hoped that it can provide valuable reference basis for safe production and risk control in Enterprise of vehicle maintenance and repair. So as to promote the sustainable development of Enterprise of vehicle maintenance and repair.

Methods: (1) Literature research method. This paper collects relevant research reports on production safety and risk management at home and abroad and in Enterprise of vehicle maintenance and repair, as well as academic papers and relevant regulations issued by the state, etc. (2) Empirical Research. In order to effectively solve the practical problems of safe production and risk control in Enterprise of vehicle maintenance and repair. (3) Interdisciplinary research

method. Because there are many principles and disciplines involved in the structure of the automobile itself, such as the theoretical knowledge of mechanics, mechanics, electronics and many other disciplines, in order to be able to conduct a more in-depth study.

Results: Therefore, the full implementation of production safety and risk control work in Enterprise of vehicle maintenance and repair is also very beneficial to the production, operation and development of enterprises. Therefore, it is particularly important for the efficient completion of production safety and risk control work in Enterprise of vehicle maintenance and repair. Therefore, production safety and risk control in Enterprise of vehicle maintenance and repair are the premise and foundation for all industries to ensure the effectiveness of work and normal and orderly development.

Conclusions: The countermeasures to solve the problems are summarized, so as to reasonably and effectively control the safety production in Enterprise of vehicle maintenance and repair, so that the production and operation in Enterprise of vehicle maintenance and repair will have evidence to follow and the causes of various problems will be clarified. To effectively solve different problems in combination with the actual situation can really ensure that Enterprise of vehicle maintenance and repair can carry out efficient production and operation in a safe state, thus promoting the normal and efficient operation of production in all walks of life in our society.

187 | Research on communication mode of media sports

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Objectives: This paper takes the communication mode of media sports as the research topic, and conducts in-depth research on the specific mode of media sports communication, hoping to provide reference for the efficient realization of media sports communication.

Methods: (1) Literature research method. Firstly, this paper collects a large number of relevant papers, research reports, academic papers, etc. in combination with the identified research topics, and systematically and comprehensively sorts out, summarizes and analyzes the research results of media sports communication modes, etc. (2) Case analysis. In the process of expounding, analyzing and studying the media sports communication mode, this article has incorporated some authentic cases both at home and abroad, which will make the research on the media sports communication mode clearer and more convincing. (3) Empirical Research.

Empirical Research belongs to a special form of practical research. It mainly combines theory and practice to carry out purposeful and step-by-step control of the subject. It also combines observation and recording, testing and corresponding changes in actual phenomena to clarify the relationship between phenomena and rules.

Results: Sports communication originally belongs to the behavior and process of information communication, and is also a very important communication content in society. Especially in recent years, with the wide application of media technology, sports information dissemination has gradually become an important market for the vigorous implementation and application of media technology. Due to the continuous improvement of media technology, the dissemination of sports information has become more timely, efficient and accurate, thus promoting the dissemination of sports information.

Conclusions: With the deepening of the world sports process, the emergence of the media has a very great promoting effect on sports communication, and this effect is also an inevitable trend of social development. Moreover, people's concept and acceptance of information consumption are changing with the development of society. In this case, it is particularly important to study the media sports communication mode. In this system, only with the increasing number of people who consume sports, the sponsors and advertisers of sports activities will increase their investment in sports. In this case, the copyright fee for the broadcast of sports games will also increase, thus enabling the owners and operators of sports events to obtain satisfactory benefits. In this way, more capital will be invested and competition in sports events will become more intense. If this happens for a long time, brand effect will be formed and a virtuous circle will be formed.

188 | Research on dance movement simulation based on artificial intelligence technology

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Objectives: Based on human dance movement, humanoid robot dance movement realized by artificial intelligence technology analyzed the simulation method of robot movement, and the body movement of robot dance was realized by designing simulation system. In the process of studying the movement of the robot's dancing limbs, the rotation data of each steering gear was determined to realize the coordination and control of every degree of freedom of the robot. The experimental results of dance movements based on artificial intelligence technology proved the correctness and

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feasibility of the method, which was of great significance to the simulation research and application of artificial intelligence technology.

Methods: (1) Grey level transformation. In this paper, the video image is processed into a grayscale image by means of grayscale transformation to reduce the color information contained in the image; (2) Thresholding of moving image. The purpose of image thresholding is to get the binary-value image of moving image, and the main method to achieve it is to choose the proper threshold value; (3) Segmentation of moving image; (4) Establishment of codebook. In this paper, similarity measures is used to build the codebook based on 3D Zemike moment.

Results: The ultimate control of the action is achieved through programme. An action can be divided into starting position, intermediate process, terminal position to describe. The starting position is known. When an action is performed, the terminal position of the previous action is the starting position of the next action. The end position is the end position of the action, which can be calculated according to the requirements of the action design. The starting and ending positions are known, and how to control the intermediate process is actually the transformation of countless starting positions. Actually, animation is actually discontinuous, and it is only a picture with continuous changes caused by the visual principle. In this process, each picture is constantly replaced by a new one, so that the observer will have the illusion of a continuously moving dynamic picture, and the picture itself is actually static. Using this principle, the amount to be transformed can be divided into many segments on the basis of the initial position, and a certain amount of change can be assigned to each segment at a certain time. When the segment is enough, a continuous action can be observed.

Conclusions: This technique can also be set to provide dance sequences which blend the styles of two dancers. This tool can be used for future work: if every dancer has his or her own screen and repeats sequences provided by algorithms. Though some details still need to be adjusted, the dance will be built in real time and the previously unimaginable combinations of movements can be imagined.

189 | Research on the management of college students based on network environment

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Objectives: In the information age, network information technology has spread to all fields of society and plays an irreplaceable role. In this context, the management of college students has also entered the stage of networking. Under the network environment, the management of college students has shown new characteristics. Not only is the management mode developing towards diversification, but also it requires higher professional skills of managers. In order to ensure the effectiveness of the management of college students, college managers should fully recognize the characteristics of the management of college students under the network environment, actively learn and master the network information technology, fully rely on the advantages of network information, innovate management methods, optimize management modes, cultivate college students' self-management awareness and skills, and promote the continuous improvement of the management level of college students.

Methods: The network environment under the university student management strategy research. Establish the main position of ideological and political education through the Internet, a new platform. Make use of the Internet as a new medium to communicate with students. Strengthen the construction of harmonious campus and enhance the attraction of realistic space to students. Adapt to the network management environment and establish a self-management system for college students. Innovate the management consciousness of college students and strengthen the construction of professionalization and specialization of management team.

Results: However, in the context of the network, the personalized thoughts of college students need to be guided by professional teachers. However, many full-time teachers will be confused about their posts and future development after working for a period of time, will not recognize this post, and will then use it as a springboard for career development, so they will leave as soon as there is a better post. Independent colleges in colleges and universities should have a stable student management team, and at the same time, they should also establish a professional management team, which can take ideological and political education of college students as the core to distribute various tasks.

Conclusions: At the same time, managers should make full use of the advantages of network informatization, expand student management channels, establish the school official website and Wechat Official Account, penetrate the school management culture and management ideas from multiple angles and three-dimensional, promote the formation of students' self-management consciousness, cultivate students' moral qualities of self-esteem and self-love, and lay a solid foundation for them to enter the society in the future. This paper studies the management of college students from two aspects, aiming to help the progress and development of the management of college students in our country.

190 | Comparison and summary of the two construction techniques of high piers of slip-overturn combination and hanging formwork in the practical application

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Objectives: The high pier construction has many kinds of techniques, and each has its advantages and disadvantages. The traditional construction technology of turning over form and the sliding form is gradually replaced by the new construction technology because of its unsafe performance and the component appearance quality problems. The combination of the sliding form and the lifting form is an application technology based on the traditional high pier construction technology, which has been promoted because of its safety and high efficiency. This paper mainly relies on the high pier construction of Xiamen Songxia Sea-Crossing Bridge and Guizhou Jianrong Expressway. It summarizes the problems encountered in the practical application of the two construction techniques and their respective advantages and disadvantages, and puts forward the optimization suggestions.

Methods: Brief introduction of the slip-overturn combined construction technology. Lifting of the operating platform and the installation of the reinforcement bar. External mould lifting and template processing. Maintenance of the pier body and coating of the anticorrosive coating. Plane positioning. Concrete casting and slip-up of the internal form.

Results: The difference between the high pier slip-overturn combined construction and the hanging formwork construction is that the inner formwork of the slip-overturn combined system is lifted close to the inner wall of the pier column during the concrete pouring, while the inner formwork of the hanging formwork construction system is lifted away from the inner wall after the concrete pouring and the strength reaches 2.5Mpa. The slip and tumble of CPA3 Project in Changping is combined with the construction of the high pier standard section, which is poured once a day with the effect of 2 m/d. The construction of the standard section of Jianrong suspension formwork in Guizhou is poured once every two days with the effect of 1.25 m/d. The combination of slipping and turning is superior to the lifting die in efficiency, and the speed of the demolition plays a decisive role.

Conclusions: As a new and efficient construction technology, the fixing of the exterior formwork is an insurmountable shortcoming. It is hoped that this problem can be effectively solved in the future construction process. The setting of the platform climbing ladder in the combination system of slip and turnover is an improvement made by the construction technicians in combination with the actual construction. It is hoped that they can accept and absorb each other in the future production, optimize their respective construction systems, and make the technology safer, more economical and more efficient.

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191 | Research on the copyright of artificial intelligence generated contents

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Objectives: With the development of the information technology and the improvement of the computer program algorithm, it is difficult to distinguish the contents of the AI generation from that of the natural person creation without a clear source. However, because the contents of the AI generation have the positive significance for the social development and the human activities and have direct economic interests, many disputes about the copyright ownership have arisen. In this paper, the principle of the AI content generation and the uniqueness of the works are elaborated, and the strategies of the copyright protection of the AI content generation and the ownership of the rights of the stakeholders are discussed.

Methods: The legal nature of the creative contents and the related concepts. A brief introduction to the present situation of the artificial intelligence creation. The originality of the artificial intelligence generation contents. Protection of the artificial intelligence creation contents and the attribution strategy of rights.

Results: The lack of incentives will eventually lead to the significant economic and social losses, which are not conducive to the social progress and development. This is not consistent with the content created by the artificial intelligence, which needs to be strictly distinguished and even confirmed by laws. Therefore, the ownership of the contents generated by AI should belong to the designer, the user or the legal representative of the program.

Conclusions: In summary, although AI has reached a new level of serving human beings after a long and deep development, its essence is still the operation of the computer program algorithms, and its content is not unique, and cannot meet the basic conditions of the copyright law protection. Because of its practical significance to the society and the human activities, the contents of its production should be protected by law, so we can learn from the neighboring right

to protect it by law. In the process of the practical applications, there is no compulsory registration system to distinguish the artificial intelligence generation from the natural person creation, which is worth further deliberation and discussion. On the issue of the ownership of rights, we should take full account of the rights related persons of all parties in the AI content generation, so as to promote the copyright protection and the sound economic and social development.

192 | Study on the international competitiveness of Sino-Indian trade in services—taking the computer and information industries as an example

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Objectives: With the continuous development of the computer network technology, the computer and information service trade occupies an important position in the modern service trade, so it has become an important area of competitions between the developed and the developing countries. Firstly, this paper analyses the current situation of the computer and information trade services between China and India from two aspects of the export scale and the structure. Secondly, it compares the competitiveness of the computer and information service trades between China and India by using the quantifiable indicators such as the international market share, the trade competitiveness index and the dominant comparative advantage index. The results show that China's computer and information service trades are comparatively competitive. Despite the rapid development in recent years, there is still a big gap between China and India in the international competitiveness. Thirdly, through the comparative analysis of the factors affecting the computer and information service trades between China and India, the reasons for the gap between China and India in this industry are found out. Finally, the countermeasures and suggestions to enhance the international competitiveness of China's computer and information service trades are put forward.

Methods: Countermeasures and suggestions on improving the international competitiveness of China's computer and information service trades. The governments should reasonably guide the information service industry. Enterprises should expand the industrial scale and improve the management level. Perfect the operation and construction of the software parks and strengthen the role of the industry associations.

Results: The software parks play an important role in promoting the industrial agglomeration of the computer and information services. Therefore, China should strengthen the operation and construction of software parks.

Conclusions: The industry associations play an important role in the development of the computer and information service trades. Therefore, China can refer to the establishment of NASSCOM in India to set up a national industrial organization, so as to provide a better communication platform between enterprises and governments, and at the same time provide the first-hand international market information for the software enterprises, actively promote the cooperative relationship between Chinese enterprises and foreign outsourcing enterprises, promote the further development of the cooperation between China's computer and information service trades and foreign outsourcing enterprises, and strengthen our international competitiveness.

193 | An analysis of higher English teaching mode for TCM under the background of globalization

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Objectives: With the development of the social globalization, TCM has spread all over the world. As an important language tool for spreading TCM, the English teaching in TCM should be attached great importance to in colleges and universities. Under the background of the globalization, this paper probes into the problems existing in the teaching mode of English for TCM, and puts forward the idea of improving its teaching mode, with a view to providing some suggestions for the improvement of the present situation of the TCM English teaching.

Methods: Teaching requirements of English for traditional Chinese medicine in the context of globalization. Problems in the current English teaching model of traditional Chinese medicine. English teaching model of the traditional Chinese medicine in the context of globalization.

Results: The main reason lies in the "double obstacles in their language and thinking" caused by the current teaching mode of TCM English, namely "double obstacles in their expression and understanding", which are manifested in students' inability to listen, speak, understand, express and innovate. There are few opportunities for students to practice listening and speaking in class, and few interactive teaching methods between teachers and students, let alone opportunities to think. On the other hand, some teachers engaged in the

TCM English teaching are selected to study abroad, master the basic knowledge and application skills of English systematically and actively participate in the clinical interpretation, to enhance their practical application abilities.

Conclusions: The in-depth development of "The Belt and Road Initiative" national strategy has brought unprecedented opportunities to the international spread of TCM, and has also set higher requirements for the cultivation of the compound and extroverted Chinese medicine talents in TCM colleges and universities. As a new subject with the interdisciplinary attributes, the English teaching of TCM has experienced more than 20 years of development, but there are still some problems in the construction of the teaching materials, the teaching mode, the teaching contents, and the construction of the teaching staff, which make it unable to fully meet the training needs of compound talents of TCM in the new era. Therefore, the future teaching of TCM English should face up to the existing shortcomings and carry out effective reforms in combination with the development requirements of the times, in order to better promote the international dissemination of TCM.

194 | Research on the application of the BIM technology in the modern construction engineering management

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Objectives: In recent years, with the continuous progress of the science and information technologies and the increase of the intelligence and high-rise buildings, the building functions show the characteristics of complexity. However, the factors affecting the quality of the construction projects are also increasing. The traditional management mode of the construction projects has been unable to meet the needs of the modern buildings. The BIM technology came into being at the historic moment, which laid a good foundation for improving the quality of the construction project management in China. In view of this, this paper first gives a brief introduction to the BIM technology and makes an in-depth analysis of the practical application of BIM in the construction engineering management, hoping to promote the quality of the construction engineering management in China.

Methods: Using the three-dimensional technology to display, render and publicize, to bring the visual enjoyment.

Fast calculation speed and high accuracy. Plan accurately and reduce wastes. Virtual construction, and coordinating the distribution. Collision checking to reducing rework.

Results: This management system combines the 4D technology with the BIM technology, and integrates the building, the 3D model of the construction site, the construction progress, the construction resources, and the safety quality and the site layout, so as to achieve the four-dimensional visualization of the construction progresses of the manpower, the site layout, the financial resources, the safety and the quality of the construction process under BIM.

Conclusions: With the rapid development of China's economy, China's construction informatization has undergone tremendous changes. As the basic technology of the new generation of the computer-aided design, the BIM technology is more and more widely used in the field of the engineering construction in China. Due to the complexity of the engineering buildings and the comprehensive nature of the multi-specialties, a lot of problems often arise in the construction, resulting in the waste of resources and the inefficiency of the project progress. The introduction of the BIM technology in the construction of the engineering projects can solve some problems in the construction, make the resources effectively utilized after optimizing the allocation, avoid the waste, and complete the optimized construction schedule scheme through the construction simulation to improve the working efficiency.

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195 | Research on the consumption behavior model of urban residents based on the BIM data

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Objectives: In economics, consumption is a macro variable term. It is not only the main factor that drives the economic growth, but also the main driving force and the source of the social development. The consumption demand plays a huge role in driving the economic growth. Urban residents' consumption behavior has a high tendency to consume under the

economic system. However, compared with the urban residents, their savings capacity is not high under the economic system, and in recent years, it has also shown a significant downward trend. According to the statistics, the annual savings balance of the urban residents is only one-fifth of the current monetary income. Since the late 1980s, China has gradually formed a development model focusing only on the growth rate, which has led to a substantial reduction in the household consumption and a weak consumer market.

Methods: The core of BIM is to build a virtual three-dimensional model of the building engineering, and to provide a complete and consistent information base of the building engineering for this model by using the digital technology. (1) Stationarity test; (2) Building the model; (3) Pulse analysis; (4) Variance decomposition.

Results: The orthogonal-impulse response function of the BIM data model can reflect the impact of a standard deviation shock from the random disturbance on the current and the future values of the endogenous variables, describe the dynamic response of the endogenous variables to random disturbances, and show how the random disturbances of arbitrary variables affect other variables through the model, and feed back to their own dynamic process. It shows the impulse response results of the residential consumption rate and the urbanization rate.

Conclusions: China's economic development is in a transitional period, and the endogenous motive force of the economic system reform and the price fluctuation is more active. Based on the data of the urban and the rural residents' consumption from 1978 to 2011, this paper uses the BIM data model to compare the dynamic curve of the urban and the rural residents' marginal propensity to consume and the quantitative relationship between the urban and the rural residents' consumption and the price fluctuation.

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196 | Fatigue test of reinforced concrete with the coupling of freeze-thaw and corrosion

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Objectives: The performance of reinforced concrete with the coupling of freeze-thaw and corrosion is rarely studied both at home and abroad. In view of this, the test of the vacuum freeze-thaw splitting is carried out under the condition of accelerated degradation of solution, and the freeze-thaw corrosion factor is used to evaluate the performance change rule of reinforced concrete with the coupling of freeze-thaw and corrosion. The test results show that sulfate corrosion aggravates the damage of freeze-thaw cycle to reinforced concrete. SEM microanalysis shows that, compared with aqueous solution, sulfate solution is more likely to intrude into the interface of the asphalt film and aggregate and the voids of reinforced concrete.

Methods: In this paper, AC-13 reinforced concrete structure is adopted. According to the dosage of fiber and design method of proportion of hot mix asphalt mixture, the optimal dosage of brucite fiber in AC-13 reinforced concrete is 0.4%, and the dosage of asphalt is 4.85%. The asphalt dosage of ordinary AC-13 reinforced concrete is 4.7%.

The freeze-thaw corrosion factor is expressed as Kdf, which reflects the relative change rule of freeze-thaw corrosion of reinforced concrete by sulfate solution and freeze-thaw action of single aqueous solution. The larger the value is, the stronger resistance of reinforced concrete to freeze-thaw corrosion. In the formula of Kdf = ff/fw, ff is the splitting strength (MPa) of corroded reinforced concrete with a certain number of freeze-thaw cycles, and fw is the splitting strength (MPa) of the same batch of samples with the same number of freeze-thaw cycles in aqueous solution. In addition, for comparison and analysis, the freeze-thaw splitting strength ratio is used to evaluate the performance of reinforced concrete in the same test environment.

Results: The test results show that the TSR of reinforced concrete in sulfate corrosion environment is lower than that of asphalt mixture in water environment, indicating that sulfate solution promotes the damage of freeze-thaw cycle to reinforced concrete and intensifies the attenuation of its performance. Therefore, adding brucite fiber can improve the freeze-thaw corrosion resistance of reinforced concrete.

Conclusions: In the process of fatigue loading, the essential cause of deterioration of macroscopic mechanical properties is the internal damage aroused by cumulative fatigue. As a random quantity, the fatigue life of concrete is very discrete. Therefore, only its probability distribution has been studied in detail, can the fatigue law be established more accurately and comprehensively. To solve this problem, some scholars put forward lognormal distribution and Weibull distribution. In the place of salt concentration, exposed concrete surface suffered from long-term erosion, which not only degraded the performance of reinforced concrete, but also affects the quality and life.

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197 | Research on the design of the information platform for music education in local universities under the background of the application transition

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Objectives: The information-based teaching has put forward new requirements for the music teaching in colleges and universities, and also provides a good opportunity for the development of the music education in teachers colleges and universities. By using the modern educational technologies, we try to explore the way of the music educational reform in colleges and universities, so that the music education in colleges and universities can change from a single and traditional mode to a three-dimensional and multi-dimensional mode. At present, our country has made a great decision on the comprehensive quality education, and its implementation has increased greatly. This trend will certainly bring unprecedented development opportunities to the music education. Therefore, the music education in colleges and universities needs to seize such a rare opportunity and strive to achieve scientificalization and informatization, so that it can take a new step and catch up with the trend of the music education development.

Methods: The network data are extracted and stored as the local data files by means of the network crawler and API. File acquisition: Flume collects and processes the real-time files, while ELK collects and processes logs. As a data exchange format, JSON realizes the access of the Android client's online learning platform. Model and Controller are located in the framework of MVC. Student users and administrators should design the MVC framework so as to use the browser to expand the browsing and backstage management of the teaching platform for MOOC. Page design of the teaching platform for MOOC should also be emphasized, that is, the View of the Web server of the platform.

Results: Because of the curriculum characteristics of the music teaching, the teaching content is expressed in the form of videos, audios, pictures and other multimedia. The teaching effect is often better, and the students are more receptive and more interested in their learning.

Conclusions: Practice has found that among the multimedia resources such as videos, audios and pictures, the video resources are the most suitable for the music teaching, followed by the audio and the text descriptions. In addition, we also conducted a questionnaire survey of the classroom teaching for various forms of the video materials in their teaching. The results show that in most cases, the teaching effect of the animated video in the video resources is better than that of the ordinary video. Therefore, when choosing resources, we should conform to the physical and mental characteristics of college students, so as to stimulate students' strong interests in their learning.

198 | Research on the optimization of the mathematical algorithm based on the Python data analysis

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Objectives: The Python language is elegant, simple and practical. Compared with Perl, another popular scripting language, Python is characterized by its concise and readable grammar. The Python language is concise, so the development efficiency is high, which is easy to maintain, and has a powerful scientific computing library. Python is also a general language. Besides the scientific computing, Python code exists in the system maintenance, the hacker programs, the web programming, the game development, the big data and the cloud computing. Therefore, Python is suitable for researchers in various fields.

Methods: Improved collaborative filtering algorithm combined with the association rules. The collaborative filtering algorithm is not effective in recommending the data sets with the distinct categories, because it does not consider the category differences between items, but is suitable for recommending the data sets with the unclear categories. However, in our real life, because people's concerns are different and the target population of the project is different, there are obvious differences between projects in most application scenarios. In our real life, most of the items that users are interested in are only in a few categories. If we recommend items of the same category, we can improve the accuracy of the recommendation.

There are three main methods for calculating the similarity.

(1). Cosine similarity: sim (I_i, I_j) = cos (I_i, I_j) = (1)

(2). Person correlation coefficient: sim (I_i, I_j) = person (I_i, I_j) = (2)

(3). Modified cosine similarity: sim (I_i, I_j) = cos' (I_i, I_j) = (3)

Results: Python draws on the advantages of many other programming languages and integrates them with a very simple and coordinated grammar. Python has built-in tools and features that many developers expect and are essential for the mainstream languages, enabling them to start using immediately after installation.

Conclusions: The concept of Python is very large. It is positioned as the "computer programming language". From its characteristics, it is a dynamic and "object-oriented" language. It is also an "interpretative" language. Because it is relatively simple, it is relatively easy for beginners to use Python. Python's grammar is closer to the natural language, and the pseudocode is one of its greatest advantages.

199 | Application of the network scoring system for sports performances under the background of internet+

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Objectives: The "Internet+" is not only a new way of thinking, but also a new development mode. In recent years, the "Internet+" has transformed many industries, and the "Internet + education" highlights the applications of the cloud technology, the mobile Internet, the Internet of things, the big data and the intelligent technology, highlighting the integration and innovation of our education and teaching, promoting the cross-border integration of our education and the enterprises, and giving birth to the new format of our education providing human support and the intellectual contribution to the state. The era of the "Internet+" brings new opportunities for the PE teaching. At the same time, under the environment of the "Internet+", the physical education courses are faced with many challenges.

Methods: In the new environment, it is not necessary to completely subvert the traditional teaching mode, but to improve the teaching mode and strengthen the teaching effect by using new technologies and new means. In the choice of the media presentation form, we should reflect the utmost thinking, and all should be more accurate in expressing and displaying the contents of the resources and more in line with the needs of the sports information-based teaching.

Results: The information technology education with students as the core should really achieve the transformation from giving people fish to teaching people to fishing. The information

technology classrooms should not only impart knowledge, but also cultivate students' abilities to acquire and process the information, and cultivate students' practical abilities and innovative abilities. This requires the information technology classrooms to change with the help of the "Internet+", and the network teaching should become the main form of the information technology teaching.

Conclusions: According to the prompt information displayed by the LCD, teachers select the corresponding operation commands through the IIC keyboard to input the student number and the score data, and send, receive and confirm the data. The PC of the server is equipped with the host computer software for receiving the statistics of the data, and the software can export the received data in the form of the Excel table.

200 | Research on the sports information system based on the association rule mining

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Objectives: The data mining tools can discover the association rules satisfying the conditions, but they cannot determine the practical significance of the association rules. Understanding the association rules requires the familiarity with the business background and the rich business experience to understand the data adequately. In the discovery of the association rules, there may be two objects which are not considered to have much relationship subjectively. Their association rules support and credibility are very high. It is necessary to judge from various angles that this is an accidental phenomenon or has its inherent rationality based on the business knowledge and experience. On the contrary, there may be objects which are considered to be closely related subjectively, but the results show their correlation is not strong. Only by understanding the association rules well can we remove the dross, extract the essence and give full play to the value of the association rules.

Methods: The functional architecture design of the mobile sports information system includes the design of the service processing module of the server-side Controller layer, the database design of Model layer and the Android client design. It does not involve the system administrator web page design. In the design part, the server and the sports information client are designed as the C/S structure.

Results: With the development of the wireless communication nowadays, the future of the sports information media is mobile. In order to promote the information services to the competitive heights of the new environment, combined with the mobile Internet, the traditional media establishes a mobile platform-oriented sports information system to provide users with convenient and fast wireless sports information services.

Conclusions: It is clear that the system has the functions of managing the sports information, managing the users, obtaining the sports information, and browsing and reading the sports information. Then, according to the requirements, the system is designed in details in terms of the function module, architecture, interface and data model. The main functions of the sports information system, such as the management of the sports information in the background, the management of the user information, the crawling of the sports information by sports information reptiles and the browsing, reading, collecting and sharing of the sports information by the classified storage, are realized. After the completion of the implementation, the functional test of the system is carried out and the test results are analyzed. The test results show that the system can run normally.

201 | Research on the dynamic characteristics of long-span suspension bridges based on the finite element method and an intelligent algorithm

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Objectives: The suspension bridge is a bridge structure with the main cable tension as its main bearing component. This type of bridges has the novel shape and the obvious technical characteristics. The long-span suspension bridge is a kind of the bridge structure with the cable system, which has great flexibility and strong influence of the non-linear factors. It has the high sensitivity to the dynamic excitation such as the seismic load, the wind load and the vehicle moving load. Therefore, the dynamic performance of the suspension bridge is one of the key control steps of its structural design. In order to analyze the dynamic characteristics of such bridges, the static equilibrium position and the internal force state should be determined first, and then, the dynamic analysis should be carried out, which is quite different from other systems of bridges.

Methods: The method of determining the erection parameters of the empty cables by the state of the completion of the bridge is obtained by the inversion method, and the

construction process of the suspension bridge is simulated by the software combined with the engineering practice.

Results: Because the calculation results of the plane model can only reflect the overall force of the structure, and cannot provide the accurate data basis for the design and optimization of the steel truss girder, it is necessary for the design and calculation of the suspension bridges with the steel truss as main girder to use the spatial calculation model.

Conclusions: For a completed suspension bridge, the geometric position of the deformed and stable bridge should be consistent with that of the bridge marked on the design drawings. Therefore, the finite element model of the suspension bridge should be the actual position of the bridge under the dead load, because it is the final geometric position of the bridge under the dead load.

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202 | Website user behavior prediction based on machine learning technology

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Objectives: In view of the low retention, conversion and loyalty of the users in websites, this paper proposes a prediction model of visiting user behaviors based on the machine learning technology of the logistic regression. The model preprocesses the behavior data set of website users, classifies the data set according to a fixed proportion, and verifies that the classification of the data sets obeys the same statistical distribution. Finally, the corresponding model using the logistic regression machine learning algorithm is established to predict the behaviors of the website users. The prediction results show that the model can accurately predict the behaviors of the website users.

Methods: The web site user behavior prediction is mainly divided into the following steps: finding samples: extracting from historical databases; feature extraction: connecting and matching users and databases; feature selection: retaining the highly relevant or valuable features; model training: putting the retained features into the model for training; (In the selection of models, the application of

forms and contents through their own direct and experience. In the study of the cognitive linguistics, introspection helps researchers to analyze the linguistic phenomena that reflect people's cognitive activities, and thus to analyze people's cognitive orientation. However, the subjectivity of the introspective law is too strong, so it should be corrected in the practical application, so as to make the introspective law more objective in the process of using.

Conclusions: Comparing the similarities of different languages and comparing the differences between different languages is an important way to study the cognitive linguistics in depth. The language comparison and contrast is not to deny the commonness of the language, but to analyze and study the differences of the language, so that people can have a deeper understanding of the commonness and differences of the language. The investigation is a classical method in linguistics, and it is also widely used in the cognitive linguistics. The method of the language investigation can accurately grasp the description of the language features, the relationship between the language and the folklore and thinking and so on. The investigation method is the most commonly used research method. The survey method is also effectively combined with some current information technologies to improve the efficiency of the cognitive linguistic research.

205 | Research on the information construction of the higher algebra course based on the cloud classroom

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Objectives: Mathematics flipped classroom based on the cloud platform is an advanced education mode introduced in recent years, which enables learners to participate in the learning behaviors such as the data search, understanding, research and exploration. This education mode not only enables students to choose the learning resources independently, but also makes students feel the joy of learning. The traditional education classes are centered on teachers and teaching. In the learning process, teachers are active and students are passive. Mathematics classroom based on the cloud platform is different. Its education mode transforms students into the main subjects of the learning and education. There are no too many restrictions on the age, occupation, and learning seniority of entrants. Only with the willingness to learn can we learn the knowledge through the cloud platform.

Methods: There are several problems in the mathematics teaching nowadays. Firstly, teachers' working attitude is negative and they lack enthusiasms for their own work, and secondly, teachers' mastery of mathematics knowledge is limited to the study of the mathematics level and there is a lack of the researches on other teaching materials. Thirdly, teachers' teaching methods are single, and they blindly follow the texts and teach in accordance with the rules.

Results: With the reform and development of the teaching practice, the information-based teaching has become the mainstream of the teaching mode in the process of the higher mathematics teaching. The application of the cloud classroom in the information-based teaching mode is very helpful to improve the teaching effect of the higher mathematics. The cloud classroom opens a new chapter of the higher mathematics teaching mode.

Conclusions: With the deepening of college students' understanding of the cloud classroom and the continuous enrichment of the cloud classroom resources, the cloud classroom will become one of the most effective ways for students to learn.

206 | Application of the computer aided instruction in the reform of college physical education classroom teaching

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Objectives: The effect of introducing the CAI technology into the physical education lies in improving the teaching methods and systems, improving students' learning initiatives, enhancing students' learning pertinence, improving teachers' teaching efficiency and knowledge levels, promoting students' learning enthusiasms, and accelerating the speed of the knowledge updating. The basic procedures of the CAI courseware development are the courseware topic selection, the courseware design, the script compilation, and the courseware production.

Methods: With the wide application of the computers in our education, CAI has promoted the rapid development of our education, and has promoted great changes in the teaching methods, teaching concepts, teaching modes and teaching structures. On the basis of CAI, it is a new direction for the development of our education in China to establish a centralized and unified new educational information management system and evaluation system, speed up the construction of the educational information management personnel and improve the overall level of our educators.

Results: The multimedia CAI assisted instruction is mainly used to create the teaching situations, rebuild the learning materials and help students learn. This teaching method itself cannot replace the dominant position of the teachers in the teaching. In the teaching of physical education, the designer of the teaching situation is the teacher, not the multimedia CAI assistant system. Although the multimedia CAI assisted teaching method has the strong vitality and the good application prospects, representing the trend of the physical education reform, it cannot deny the role of the traditional teaching methods.

Conclusions: Dialectically look at the relationship between the traditional teaching and the multimedia CAI teaching. The traditional teaching method is the most mature teaching method at present. The multimedia CAI teaching, which represents the modern teaching method, is a new thing brought about by the progress of the science and technology. The reform, improvement and continuous perfection of the traditional teaching methods cannot be separated from the multimedia CAI teaching. What kind of the teaching method to adopt must proceed from the teaching practice, make them combine with each other, and play a complementary and mutually advancing role in the teaching process.

207 | Application of machine learning method in text classification

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Objectives: With the rapid development of the information technologies, and especially the popularity of the Internet, the information capacity is increasing explosively. People urgently need a technology to organize and manage the information efficiently. The text categorization technology can accurately and efficiently locate the information and provide the strong support for the information acquisition. The text classification method based on the machine learning has a breakthrough in the classification effect and the flexibility compared with the traditional text classification model, and has become a classic example of the research and application in the related fields.

Methods: The text data are usually semi-structured or unstructured, but the computer cannot directly calculate the text data, and it needs to be converted into the computable model. The most commonly used text representation model is the Vector Space Model (VSM), and in VSM, after the word segmentation, the text first removes the stop words, and then counts the word frequency, and finally expresses it in the vector form. In addition, the text is simplified to the so-called BOW (bag of words), ignoring the word order, grammar and syntax of a text, which is only regarded as a set or a combination of words, in which each word is independent. At present, BOW has become a common mode of the text categorization.

Results: After the word segmentation and deletion of the stop words, words represent the features of the text, so the dimensions of the vector space composed of all the features in the training set are quite high, which can reach tens of thousands or even hundreds of thousands of dimensions. It is necessary to select and extract the important features.

Conclusions: After the pre-processing, the text will get one word after another, and the diversity of the Chinese words, resulting in the high-dimensional feature vectors, and the dimensions of each document are not necessarily consistent, which has an impact on the subsequent classification. So the feature selection is needed.

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208 | Research on the unmanned aerial vehicle image recognition method based on deep learning

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Objectives: The wide use of UAVs not only brings convenience to people, but also causes adverse effects. The traditional identification methods are not flexible enough, and the accuracy is not high enough. In this paper, a deep learning based on the UAV recognition algorithm is proposed. By training a learning network based on the convolution neural network (CNNs), an efficient recognition model is obtained to realize the classification between the UAV and the non-UAV. The test results of the model show that the method has a high recognition rate.

Methods: Establishing a visual sensor network for the image capture and the information storage of UAV; introducing the in-depth learning to identify the UAV, discovering the "Black Flying UAV" in time, and taking the corresponding alarm measures to realize the overall supervision of the UAV.

Results: The experimental results show that the proposed algorithm is more accurate than the traditional SAE algorithm based on the non-transfer learning and the recognition algorithm based on the low-level visual feature learning.

Conclusions: In the complex battlefield environment, because the shapes and colors of the unmanned aerial vehicles of both sides are similar, how to recognize the enemy

unmanned aerial vehicles accurately is the key to realize its autonomous navigation and the combat mission execution. Due to the change of the flight speed, shape, size and attitude of the enemy UAV and the influence of the meteorological factors, it is impossible to identify and classify them accurately. To solve this problem, a Sparse Auto-Encoder (SAE) based on the transfer learning convolution is proposed to recognize and classify the enemy targets in the aerial multi-frame images. Firstly, the algorithm uses SAE to unsupervised study a large number of the unlabeled samples in the source domain data set to obtain their local features, and then, the global features of the target images are extracted by using the pooled layer convolution neural network (CNN) algorithm. Finally, the target object is recognized and classified by feeding into the Softmax regression model.

these ethnic minority cultures into the product packaging, carrying forward the cultures of the ethnic minority areas, sticking to the people-orientation and localization, and highlighting the nationalization and localization, will bring enormous economic benefits to the ethnic minority areas.

Conclusions: In addition, the integration of the minority elements into the modern design also has the important social benefits. The traditional patterns of the ethnic minorities are the most objective records of the material and spiritual cultural life of a nation in a certain period. They themselves record the historical process of the development of a nation, which is a history of civilization. It contains the essence of the Chinese national cultures and reflects the joys and dislikes of the Chinese people for thousands of years. It has the strong vitality for its own growth and has formed an important foundation of our national cultures.

209 | Application of the Chinese minority visual elements in the packaging design of agricultural products—A case study of Uygur agricultural product packaging design

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Objectives: In an open and inclusive market economy environment, the packaging design elements of modern products are diverse and varied, from the traditional elements to the innovative elements. Its purpose is not only to seize the market share and pursue the commercial interests, but also to achieve the white-hot competition among the similar products. Breakthrough innovation is the only way for enterprises to seek development in the competition. Our country focuses on the protection and inheritance of the minority cultures, and the minority cultures are heading for the stage of the world with a bold momentum. The collision between different cultures has burst out new sparks. The application of the minority visual elements in the modern product packaging design is a sense of breakthrough and innovation, bringing new development to the product packaging design. This article will take the application of Xinjiang Uygur ethnic elements in the product packaging as an example to explain the application of the minority cultures in the product packaging design.

Methods: (1) Direct application. (2) Indirect application. (3) Refactoring application. (4) Simple and efficient transmission of the information. (5) To meet the aesthetic needs of the consumer groups. (6) Enhancing the brand awareness.

Results: With its unique national cultures, ethnic minorities have the strong local characteristics, the profound cultural heritage and the distinct national characteristics. Integrating

210 | On the classified teaching reform of college English courses based on the internet thinking

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Objectives: Based on the Internet environment, the reform of the college English teaching has been carried out in various forms, and new modes and methods are emerging. With the further deepening of the educational reform, the college English teaching also needs to change teaching concepts in time and use new teaching thinking to carry out the teaching activities. In the era of the "Internet+", it will also have a great impact on the reform of the college English teaching, and it will have a positive effect on improving the English teaching levels of college students. The development of the information technology has brought profound changes to the whole world, and the field of education has also been deeply affected by it. The "Internet+" is the further practical fruit of the Internet thinking, and all sectors of the economy and society can make use of the achievements of the Internet innovation to form a new development form.

Methods: Target location and classification strategy. Classification strategy of the in-class teaching. Classification strategy of the extracurricular teaching. Emotional motivation strategy. Evaluation classification strategy. Development path. Creating an online learning platform. Scientific construction of the learning resources. Strengthen the online and the offline communication.

Results: It defines the general goal of consolidating students' basic skills in listening, speaking, reading, writing and translating, cultivating students' English application abilities and expanding students' comprehensive qualities, defines the

basic principles of classifying and layering, serving the local areas, developing personalities and applying the network technology, implements the teaching mode of "classroom + network independent learning".

Conclusions: Implements the students' classifying and layering teaching and the dynamic management, and puts forward some suggestions on constructing the "Mobile English Learning Platform" and the "Internet English Learning Platform" (APP). The formative assessment and the summative assessment are combined to evaluate students' learning effect, so that students' learning will develop towards the initiatives, autonomy and individualization.

211 | Research on building design model based on BIM management system model and data mining

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Objectives: BIM, which is a concept (or an idea), is a systematic engineering that can improve the quality and efficiency of every link of the whole industry chain from planning, design, construction and operation of engineering construction industry. It makes the design, construction and management work on the same platform, which is the integrated management environment of construction engineering, which can significantly improve the efficiency and greatly reduce the risk in the whole process of construction engineering. It can be used as the actual guidance of the construction in the later phases in order to provide a reasonable construction plan and personnel, the reasonable allocation of material use, so as to maximize the rational use of resources. Based on the expression of BIM parametric model in the process of information transmission, this paper discusses the method and application of BIM parametric model in building design, including the creation, deepening and use of model in order to bring power to the majority of professionals.

Methods: By teasing out the building space system as well as facilities and equipment system, and taking the BIM model as the carrier; the whole life cycle information of the building is managed as a whole. Taking the firefighting and energy saving system as the object, the relationship between the building space system as well as the facility and equipment system is analyzed from the perspective of system theory, so as to provide theoretical basis and technical support for the establishment of the facility management platform based on the BIM model and the optimization management of the implementation process.

Results: Modern architects can fully display the design concept of bold and innovative ideas, and they can use three-dimensional information model analysis. Also, digital models can also provide a lot of construction information. In addition, larger area planning analysis can also be carried out, such as the simulation analysis of sunshine, wind direction and precipitation in the region.

Conclusions: The possibility of natural disasters can be predicted according to different regional slopes, so it is also crucial for the preliminary site design. It can run through the whole building, make sustainable design analysis before construction and control materials, which can save cost, water, node and energy. In the later stage, it can make reasonable optimization according to the collected information, such as rainwater, solar energy and building materials.

212 | Research on integration of environmental art design and digital media

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Objectives: The rapid development of social economy has promoted the continuous improvement of people's living standards. Integrating artistic elements into the living environment can improve the living artistic atmosphere in different ways. The design of environmental art pays more attention to urban planning and the presentation of environmental beauty in the process of designing and planning people's living comfort. In this process, the modern science and technology digital media technology have been greatly developed and improved since it arrived in inside, and it is also continuously developing and growing in all sectors of society. The design of environmental art and the efficient integration of digital media technology can promote mutual development more efficiently. Therefore, in this case, this paper takes the integration of environmental art design and digital media as the research topic and conducts in-depth analysis and research on it, hoping to lay a foundation for the development of environmental art design and digital media technology.

Methods: (1) Literature research method. After determining the research topic, combining with the content of this topic, a large number of domestic or foreign related research reports, academic papers and other documents were collected, and the corresponding research results of the integration of environmental art design and digital media technology were systematically collated, summarized and analyzed in all aspects. (2) Interdisciplinary research method. Because the integration of environmental art design and digital media technology involves a lot of theoretical and technical knowledge, such as

the knowledge of many disciplines such as design, structure, digitalization, informatization, and electronization, in order to conduct in-depth research on the integration of environmental art design and digital media technology, it is necessary to use interdisciplinary research methods in the research process in order to make the research more profound and perfect.

Results: There is a close relationship between scientific progress and artistic sublimation. Scientific progress will definitely bring about great changes in the field of artistic design and industry. The rapid development of digital media technology is an internal move in the development of environmental art design, and the brilliant development of environmental art design can create a broader development space for the development of digital media technology.

Conclusions: The design of environmental art mainly includes many contents, such as architectural appearance design, garden design, indoor and outdoor environment design, etc. Environmental design belongs to a relatively prosperous specialty at present. Digital media mainly uses digital information technology to spread information on a large scale. The wide application of this media form will make the information spread rate more efficient and convenient. At the same time, it can also present people with aesthetic and sufficient visual effects, which are loved by people, and also benefit enterprises considerably. Therefore, digital media technology has been applied efficiently in the design industry.

213 | Research on optimization of wheat germ bread formula by response surface method

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Objectives: Based on the primary bread formula, wheat germ is added to make wheat germ bread. The effects of wheat germ, water, yeast and salt on bread quality are researched. On the basis of single factor experiment, the addition of wheat germ, water, yeast and salt is optimized by response surface experiment.

Methods: Technological process: Processing process using one time fermentation method: ingredients→flour modulation→ fermentation→reshaping→final fermentation→baking →cooling packaging→product; Product evaluation method: The quality of product is evaluated according to Scoring Criteria of Bread Baking Quality issued by the Chinese Academy of Agricultural Sciences; Response surface experiment: The sensory score of wheat germ bread is used as the response value to design a total of 29 experimental sites with 4 factors and 3 levels for response surface analysis.

Results: When $P < 0.05$, the model is remarkable, when the $P < 0.01$, the model is highly significant. Therefore, A, B, C, D, AB, AD, CD, A², B², C² and D² are all significant. AB, AD and CD are significant, which indicates the interaction between wheat germ and water, wheat germ and salt, yeast and salt also significantly affected the sensory score of wheat germ bread. Therefore, a proper ratio of water and wheat germ is needed to make the dough have good water holding capacity and increase the softness of wheat germ bread in order to achieve the optimal sensory quality; A proper ratio of wheat germ and salt is needed; Only the yeast and salt reach the optimal value respectively, can the quality of wheat germ bread be ensured.

Conclusions: In order to develop wheat germ bread and further optimize the formula of wheat germ bread, this experiment investigated the effects of additive amount of wheat germ, water, yeast and salt on bread quality.

(1) Analysis of the additive amount of wheat germ, water, yeast and salt affecting bread quality is made. The results of single factor experiment show that the optimal additive amount of wheat germ, water, yeast and salt are 6%, 40%, 2.0% and 1.0%, respectively.

(2) On the basis of single factor, we take sensory score as the response surface, design the response surface experiment with 4 factors and 3 levels, and further optimize the formula parameters. The results show that the best formula of wheat germ bread is 6% wheat germ bread, 40% water, 2.5% yeast, 0.5% salt. The wheat germ bread made under these conditions has a soft texture, uniform color, uniform porosity and delicious taste.

(3) The interaction between wheat germ and salt has a significant effect on bread quality. The interaction between wheat germ and water, yeast and salt have a highly significant effect on bread quality.

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214 | Integration drive and public vision: Research on the construction of the radio and television public service system under the background of the media integration

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Objectives: The medium integration is a new type of media, which integrates the advantages of radios, televisions and

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the Internet, and makes full use of each other, so as to enhance its functions, means and values. We should reasonably integrate the human and material resources of the new and the old media, change their respective services into the common services, analyze the advantages and disadvantages of the new and the old media, complement each other with their advantages, promote their advantages and eliminate their disadvantages, achieve the effect of one plus one over two, and make the social and economic benefits mutually integrated.

Methods: The fusion media matrix combines all the self-media, such as Micro-blog, We-Chat Public Platform, APP, websites, and videos and so on, to form a media matrix, which makes the dissemination more widespread and the forms more diverse and easier to attract the public attentions. The medium matrix makes the boundary between the media clear and blurred, and it "opens up" the use of various media.

Results: Under the guidance of the governments, we should enrich the service contents, expand the coverage to reduce the service gap between the urban and the rural areas, improve the system mechanisms, increase the financial support and the corresponding service legal system construction, and finally gradually realize the long-term mechanism of the radio and television public service system and realize the equalization of the radio and television public service system and a series of other goals of the system construction.

Conclusions: In summary, the media convergence has a benign impact on the construction of the radio and television public service system, and also has a new challenge. Taking advantage of the opportunities brought by the influence of the advantages to reflect on the challenges, it provides a media convergence strategy for the construction of the radio and television public service system. At the same time, the path of the construction of the radio and television public service system in the perspective of the media convergence is also coming out.

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215 | Construction of the piano accompaniment teaching platform under the background of the remote multimedia network

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Objectives: Since the 20th century, with the application of the computer multimedia technology, animations, texts, graphics and music have been combined to further improve the music teaching methods and enrich the contents of our education and teaching. Novelty and unique feelings can stimulate students' enthusiasms for music learning, improve students' interests in music learning, and achieve the goal of the multi-music teaching. In the performance of the vocal music art, the piano accompaniment and the music works are the inseparable two important parts. Many excellent art songs are based on the piano accompaniment. As a music teacher, we should make full use of the characteristics of piano, integrate it with the students in our teaching, interpret the connotation of the music works more perfectly, mobilize students' enthusiasms for creation, and fully display the artistic charm of works.

Methods: Accompaniment texture matching the music emotions should be selected accurately. Tacit coordination should be formed with the teaching objects. Network real-time evaluation system and question answering system. On demand function of the streaming media courseware based on P2P. Construct the information-based teaching platform. Explore the information-based teaching method. Pay attention to the information-based teaching evaluation.

Results: The piano improvisation accompaniment, as a basic skill of the music teachers, plays a huge role in the vocal music teaching activities in the normal universities. It not only requires us to have the agile thinking, the flexible fingers, and rich and skilled theoretical knowledge, but also needs us to have a sound musical accomplishment and the broad artistic vision, in order to improve the teaching levels, achieve the better teaching effect, and cultivate more and better new music talents.

Conclusions: The information-based teaching evaluation can be used in the formative evaluation. In addition, through students' self-evaluation, students' mutual evaluation and assessment, as well as the comments between teachers and students in the class performance activities, teachers can learn more about students' knowledge and problems encountered in their playing, and adjust the teaching methods in time.

216 | Planning and design the mutual-aid elderly communities

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Objectives: As a part of the system of the old-age service facilities, the old-age community is an important spatial carrier for implementing the old-age planning. Based on the background of the labor shortage in China and under the guidance of "mutual support for the aged" model, this paper innovatively puts forward the concept of "mutual support for the aged community". Taking the domestic and foreign elderly communities as the research prototype, this paper explores the scale layout model of the mutual support for the aged community and explores the requirements of building an old and liveable community environment in combination with its mutual assistance residential units, supporting facilities, and spatial planning layout model.

Methods: The spatial facilities with relatively simple traffic flow lines and strong functionality and convenient passages should be set up. Not only should all kinds of the barrier-free facilities be set up, but also the space for walking and the wheelchair application of the elderly should be fully considered, and must eliminate all the elevation differences on the ground.

Results: Emphasis on the planning and designing of the aging. Pay attention to the safety planning and design. Satisfy the communication promotion planning and designing. According to the health status and the economic conditions of the elderly, it is particularly important for the mental health of the elderly to set up the multi-type residential groups, provide the differentiated services and do not interfere with each other.

Conclusions: In the planning and designing of the elderly community, every detail must take full account of the characteristics of the elderly, as well as the various decline of the elderly, and adopt a more delicate and suitable design method for the physical and mental characteristics of the elderly, so as to help the elderly to have a safe, convenient and energetic life in their old age.

217 | Physical health and safe exercise of transportation personnel

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Objectives: In the process of transportation, there are many factors that affect the safety of drivers. It is very important to study and analyze the relationship between drivers' physiological health and road transport safety, and then master the common occupational diseases and preventive measures for drivers. This paper focuses on the important influence of drivers' physiological health conditions on road safety, including five influencing factors such as driving fatigue, alcohol, disease, drugs and lifestyle, and proposes common occupational diseases and preventive measures to improve the ability and level of safe driving.

Methods: Ensure correct driving posture, proper exercise, regular rest, pay attention to vehicle maintenance, regular, reasonable diet, less smoking.

Results: In the process of transportation, the factors that affect the driver's safety include the driver's driving skill, the degree of obeying the traffic safety law and the driver's mental and physiological health. Major factors involved in physical health: visual, auditory, perceptual, and reactive characteristics.

Conclusions: Driving fatigue, alcohol, disease, drugs and lifestyle are the main factors affecting drivers' physical health.

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218 | Computer networking tendency of the technology environment of the electronic music production

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Objectives: In the development process of electronic music creation technology environment, influenced and inspired by the development of computer technology and computer network technology, people gradually explore the way to realize real-time music information interaction between computers and computers through TCP/IP protocol and computer networking. In this paper, this method is called "networked electronic music creation system based on TCP/IP protocol", and its functional characteristics, application environment and classification are analyzed and summarized.

Methods: In this paper, this method is called "networked electronic music creation system based on TCP/IP protocol", and its functional characteristics, application environment and classification are analyzed and summarized.

Results: Obviously, in order to achieve greater success in artworks and deeper connotation and outstanding work performance or performance can view and admire a gender, and to explore how to realize the electronic music creation,

especially its main body, the computer environment on music interactive ability is stronger, convenient and more effective technical methods and means, will become the future for a period of time the technology of electronic music creation a hotspot and trend in the field of environment.

Conclusions: With related environment further mature computer network technology, described in this article based on the TCP/IP protocol to construct a system of networked electronic music creation in the future is not a long period of time will break long plagued the bottleneck of its development, the network bandwidth limits, more fully reflect it in compatibility, hardware requirements, remotely transmission capacity, especially the unique function of superiority, for electronic music creation and development of more powerful technical force.

219 | The effect of salt content on quality of beef pickling

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Objectives: The influence of salt content on quality of beef pickling has been studied. Saline solution with the concentration of 2%, 4%, 6% and 10% was respectively used to pickle beef, and the pH value, pickling absorption rate, rate of loss when cooked, compression water loss rate and shear force were respectively measured. The results revealed that the salt content had little effect on the pH value of beef; however, when the mass concentration of salt was 6%, the pickled absorption rate of beef was the highest, the rate of cooking loss and compression water loss were the lowest, and the shear force was the minimum.

Methods: (1) Preprocessing of raw meat Select the frozen beef which is qualified in sanitary inspection and unfreeze it at normal temperature; (2) Pickle; (3) Cooling; (4) Stand; (5) Measure.

Results: With the increase in the amount of salt added, the sensory score of color and luster also increases. In addition to its own saltiness, salt can also form the characteristic flavor of meat products, so when the amount of salt added is 6% and 8%, the sensory score of flavor is higher. In order to maintain the good flavor and taste of pickled meat, the choice of salt concentration should be 4% or 6%; there begins to be residuals, resulting in the gradual decline

of pickling absorption rate; When the mass concentration of salt is 6%, the cooking loss of pickled beef is the lowest, and the compression water loss rate of pickled beef is the lowest. The salt mass concentration is 6%, the sheer force of pickled beef is the lowest, products are the most tender, and the taste is the best.

Conclusions: Based on the study of several measurement indexes affecting the quality of pickled beef and the effect of different salt content on the quality of pickled beef, the quality of pickled beef is evaluated by pH value, pickling absorption rate, cooking loss rate, compression water loss rate and shear force respectively. When the mass concentration of salt is 6%, the pickling absorption rate of pickled beef is the highest, the cooking loss rate is the lowest, the compression water loss rate is the lowest, and the shear force is the minimum (the meat is the most tender), indicating that the pickled beef has the best quality and tenderness under this concentration, which is suitable for the consumers. The experimental study has a certain guiding significance for the improvement of the production process of meat products and exerts a positive effect on solving the problem of the quality of pickled beef.

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220 | A study of computer technology application in translation teaching in a big data era

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Objectives: Statistics show that the fast development of computer technology has largely influenced the world's professional and business translation. Especially the CAT software has greatly improved the efficiency of project translation. There is no exception to the university's translation courses teaching. According to the Imperial College London's statistics on Translation Memories Survey in 2006, the percentages of different mostly used translation memories are: TRADOS (51%), Wordfast (29%), SDL Trados 2006 (24%), Déjà VU X (23%), SDLX (19%) and STAR Transit (14%). And more than 53% of the professional translators used more than one type of the translation memory system. This article mainly focuses on studying Machine Translation and Translation Memory with the combination of the CAT practices in education of translation courses.

Methods: Introducing Computer-aided Translation (CAT) through the introduction of Machine Translation (MT) and Translation Memory. Citing a writer's five modules for CAT course teaching after many classes' practice. The author finished the five above mentioned modules in four classes, and upgraded phase by phase, then consolidated them through in-class translation exercises, project comment, and project report. "Term bank and corpus" is elaborated in the fourth part.

Results: The CAT course was quite successful. It greatly improved the students' translation skills and more importantly expanded the students' ability to do a large translation project. As for corpus, the teacher should require the students to grasp some corpus analysis tools such as AntCon, Monoenc, ParaCone and Wordsmith. The students should totally understand some important parts of keywords, word frequency, vocabulary, index and etc. The teacher ought to tell the students to note down questions that occur during the translation and try to overcome them by themselves.

Conclusions: The CAT technology developed very fast and so sophisticated that should be used for us to do translation work. As the requirement of global communication, there are millions and thousands of translation project need to be done. Only with the help of the machine translation software can the translators finish the translation project with high quality and efficiency. As a teacher, one should use the modern computer translation technology to teach the students because they are the future translators.

221 | Research on the time value of General Secretary Xi Jinping's important discussions on literature and art work

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Objectives: General Secretary Xi Jinping emphasized that the literature and art are the trumpet of the times. They can best represent the style of the times and lead the style of an era. To achieve the goal of "two one-hundred years" and the Chinese dream of the great rejuvenation of the Chinese nation, the role of literature and art is irreplaceable, and there is great potential for the literary and artistic workers. General Secretary Xi's speech, from a historical, realistic and future perspective, makes a penetrating exposition of the important position and the role of the literary

and artistic work, which is of far-reaching significance and highly targeted, and points out the direction for the cultural work in the new era.

Methods: General Secretary Xi Jinping's speech at the Symposium on literary and artistic work pointed out the way forward for China's literary and artistic undertakings and was another epoch-making important document after Comrade Mao Zedong's speech at the Yan'an Symposium on Literature and Art. From an aesthetic point of view, this paper understands the spiritual connotation of Comrade Xi Jinping's speech, and holds that the proposition of "taking the people as the main body of literary and artistic expression and the people as the appreciator and judge of the literary."

Results: Actively practice the measures of General Secretary Xi Jinping's important discussions on literature and artwork. General Secretary Xi Jinping pointed out that the majority of literary and artistic workers should hold high the banner of the socialist core values and should vividly embody them in the literary and artistic creation. This pointed out the right direction of the literary and the artistic creation for us. According to Marx, there is a dominant ideology in every social form, which can only be the ideology of the dominant class. Advanced times always have an upward spirit, and a developing society always has a positive mainstream.

Conclusions: Adhering to the position of the Chinese cultures, promoting the excellent traditional cultures, a number of works focusing on the inheritance and innovation with the rules of the ancients and opening up their own life, enhance the vitality of the Chinese culture in creative transformation and innovative development. Thousands of sails are competing.

222 | Research on the football simulation path planning based on the optimal algorithm

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Objectives: According to the characteristics of the football system, an optimal algorithm for the football path planning is proposed. Each ant is regarded as a robot. The ant adjusts its direction according to the pheromone, and quickly finds a shortest collision-free path through the information exchange and cooperation among ants. The test results show that the optimal algorithm can overcome the shortcomings of the local

optimum and obtain the optimal path without collision, which meets the real-time requirements of the football path planning. **Methods**: TA good path planning algorithm can effectively improve the motion ability of the robots, so that the robots can move safely and efficiently. Image signal acquisition and processing based on the optimal algorithm combination. In the main control part of the target detection, the real-time image acquisition is carried out by controlling the CCD. The current frame is compared with the background image, and the image after the comparison is enhanced, filtered and extracted. Finally, the judgment results are given. If the target is a person, an early warning procedure is initiated. On the contrary, it will continue to judge. **Results**: The gridding method divides the robot's motion space into a series of the simple regular regions. If there are no obstacles in a gridding area, it is called the free gridding, and otherwise, it is called the barrier gridding. The lattice method is to search the connected graph composed of lattices to find a feasible route between the starting point and the target point. By combining with other methods, the performance of the grid method is further optimized, so that it can be better used in the path planning problem. Based on the practical experience of walking in the crowd, the environmental model is established by using the grid method, which successfully solves the path planning problem of the football simulation. **Conclusions**: The football simulation system recognizes the football field images captured by the camera through the image processing program of the host computer, so as to obtain the environmental information, and send the information to the decision-making subsystem through the network. The decision-making system determines the next action of the football simulation based on the environmental information. The robot car is sent by the wireless transmitter. After receiving the command, the car performs the corresponding operation, completes the planning and controls in the current cycle. The final result is transmitted back to the computer by the camera in the form of images, carries on the information feedback, and then enters the next cycle of operation.

223 | Study on factors influencing customer value proposition business model innovation among cross-strait pension enterprises—A comparative study based on cross-strait pension enterprises

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Objectives: Now that both sides of the Taiwan Straits have stepped into the aging society successively, they're both facing an urgent issue of how to deal with the increasingly severe population aging. Particularly in Chinese Mainland, to accelerate the pension industry is now an inevitable trend for deepening medical reform and improving people's livelihood. Moreover, the rise of technologies such as the Internet, e-commerce, IoT, we-media and mobile payment has also drawn forth new demands of the elder on both sides for pension quality. Only when the demand proposition maintains production-supply consistency can an enterprise's business model be easier to be implemented and promoted. Hence, a wide array of innovative pension business models is born at the right moment. **Methods**: A pentagonal pyramid model has been put forward for influencing factors of customer value proposition in cross-strait pension enterprises' business model innovation. **Results**: In this paper, in-depth interviews and multi-case comparative analyses have been adopted in the qualitative study on 6 cross-strait pension enterprises. Two of them are from Taiwan and the other four from the Chinese Mainland, all of which are in the transition from traditional to innovative enterprises. Besides, in-depth discussions have been made on how the customer value proposition in pension enterprises' business model innovation is influenced by innovative culture, impelling by senior managers, market-driving proposition, external factors and organizing ability. As shown in the study results, innovative culture is a driving factor for forming customer value proposition in cross-strait pension enterprises' business model innovation; senior managers impel the realization of enterprise business model innovation through emphasis, active participation and resource & fund support, acting as a support condition for forming customer value proposition; pension enterprises take the initiative to create and seek customer value propositions' potential demands, thus to drive the market, known as a key step of forming customer value proposition; external factors such as governmental policies, social development level and enterprise competition urge traditional enterprises to adapt to the market demand and go through model innovation to survive, which play the role of catalyst of forming customer value proposition in business model innovation; organizing ability is a core condition for cross-strait pension enterprises to implement the innovative model of customer value proposition in details. **Conclusions**: This paper has found through primary, secondary and tertiary coding that innovative culture, impelling by senior managers and market-driving proposition has a key impact on the formation of customer value proposition in the business model innovation of cross-strait pension enterprise. In order to more clearly grasp the influence of the above 5 factors on customer value proposition, and based on the previous exploratory case analysis, a pentagonal pyramid model has been put forward for influencing factors of customer value in the business model innovation of cross-strait pension enterprise.

224 | Evaluation of the effect of rapid nursing intervention in the rescue of acute myocardial infarction

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Objective: To explore the effect of rapid nursing intervention in the rescue of acute myocardial infarction.

Methods: 126 patients with acute myocardial infarction who were admitted to our hospital from January 2017 to January 2018 were divided into control group (n = 63) and observation group (n = 63). The control group was given routine emergency nursing, while the observation group was given rapid nursing intervention. The emergency rescue time, hospitalization time, vascular recanalization rate, survival rate, satisfaction with nursing quality and the incidence of nurse-patient disputes were observed between the two groups, and the clinical efficacy of the two groups was evaluated.

Results: The total effective rate, vascular recanalization rate and survival rate of observation group were significantly higher than those of the control group ($P < 0.05$); and the emergency rescue time and hospital stay were shorter in the observation group ($P < 0.05$). In addition, the comprehensive nursing quality satisfaction was higher and the incidence of nurse-patient disputes was lower in the observation group, the differences were statistically significant ($P < 0.05$).

Conclusion: The clinical effect of rapid nursing intervention in the rescue of patients with acute myocardial infarction is remarkable, which can effectively improve the vascular recanalization and survival rate, shorten the rescue and hospitalization time, and improve the satisfaction of nursing quality. It is worth popularizing in clinical practice.

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225 | Effect of high-quality nursing on emotional state, quality of life and hemostatic time of patients with liver cirrhosis associated with upper gastrointestinal bleeding

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Objective: To observe the effect of high-quality nursing in improving the emotional state, quality of life and hemostatic time of patients with liver cirrhosis associated with upper gastrointestinal bleeding.

Methods: 76 patients with liver cirrhosis associated with upper gastrointestinal bleeding were randomly divided into observation group and control group with 38 cases in each group. The observation group was given high-quality nursing intervention, the control group was given routine nursing intervention. Compare the emotional state, quality of life and hemostatic time between the two groups.

Results: The hemostatic time of the observation group after nursing was significantly lower than that of the control group ($P < 0.05$), and the scores of self-rating anxiety and depression in the two groups were significantly lower than those before nursing, and the degree of decrease in the observation group was significant. The scores of quality of life in the observation group were significantly better than those in the control group ($P < 0.05$).

Conclusion: High-quality nursing intervention can effectively improve the emotional state, quality of life and hemostatic time of patients with liver cirrhosis associated with upper gastrointestinal bleeding, and can be further popularized and used in clinical practice.

226 | The clinical value of ultrasonic quantitative measurement for patients with diabetic lower extremity vascular disease in different course of disease

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Objective: To observe the clinical value of ultrasonic quantitative measurement in patients with lower extremity vascular disease in different course of disease.

Methods: 120 cases of type 2 diabetic patients were enrolled from January 2016 to January 2018 in our hospital were selected by convenient sampling method for the object, according to the patient's different, it will be divided into three groups: group A (42 patients less than 5 years), B group (40 patients 5 ~ 10 years) and group C (course of disease > 10 years, 38), underwent quantitative ultrasound measurement of lower extremity artery. The ultrasonic diagnosis results of lower extremity arterial disease were compared and analyzed. The detection rates of three groups of arteries and arteries were observed, and the severity of arterial atherosclerotic plaques and arterial IMT changes in the lower extremities were analyzed.

Results: Ultrasound quantitative measurement indicated that 30 cases (71.43%) had plaque in group A, 36 cases (90%) detected plaque in group B, 36 cases (94.74%) in group C had plaque, and plaque detection rate in group A was significantly lower than that in group B and C, the difference was statistically significant ($P < 0.05$). The percentage of plaques in group A was significantly higher than that in group B and C ($P < 0.05$). The proportion of mild plaques was significantly higher than that in group C ($P < 0.05$), and the proportion of severe plaques was significantly lower than that in B and C group ($P < 0.05$); the proportion of mild plaques in group B was significantly higher than that in group C ($P < 0.05$), and the proportion of severe plaque was significantly lower than that in group C ($P < 0.05$).A group IMT normal proportion is B, the C group had no statistical significance ($P > 0.05$), IMT thickening proportion was higher than that in C group ($P < 0.05$), and the plaque proportion was significantly lower than that of B group and C group ($P < 0.05$); group B, normal IMT, IMT thickening, plaque formation the proportion of C group had no statistical significance ($P > 0.05$).

Conclusion: Quantitative measurement of ultrasound for patients with different stages of diabetes and lower extremity vascular disease can detect vascular injury degree in time, and has important application significance in early diagnosis, prevention and treatment of lower extremity vascular disease.

227 | Gait analysis of patients with hemiplegia after stroke based on computer-assisted rehabilitation environment

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Background: The survey shows that the annual incidence of stroke cases in China is about 2 million cases, which is also the primary cause of adult disability in China, and the current training to restore the walking ability of hemiplegia patients is a hot issue in clinical rehabilitation. In this study, CAREN (Computer Assisted Rehabilitation Environment) was used to analyze the gait characteristics of hemiplegia patients with stroke, and to provide theoretical support for the presentation of clinical treatment plan and the evaluation of rehabilitation effect.

Methods: 12 patients with hemiplegia in clinical Stroke (experimental group) and 12 normal healthy people (control group) were selected. The gait of the experimental group and the control group were evaluated by the Caren Rehabilitation system, the gait parameters were recorded and counted, and the gait parameters of the affected side, the healthy side and the control group in the experimental group were compared.

Results: The pace of the experimental group was (0.53 ± 0.21) m/s and the Step frequency was (82.29 ± 7.79)/min. The step length of the healthy side is (0.35 ± 0.12) m, the swing period time is (0.25 ± 0.02) s, the ratio of double support period is (33.95 ± 1.29)%, the maximum angle of the ankle metatarsal flexor is $(5.33 \pm 1.69)°$, and the peak of the dorsal curvature moment of the ankle joint is (0.81 ± 0.19) N· m/kg; The lateral step length is (0.27 ± 0.11) m, the swing period time is (0.54 ± 0.01) s, the ratio of double support period is (32.75 ± 1.37)%, the maximum angle of ankle metatarsal flexor is $(9.56 \pm 1.09)°$, and the peak of ankle dorsal curvature moment is (1.12 ± 0.19) N·m/kg; the pace of the control group was (1.02 ± 0.13) m/s, step Length (0.61 ± 0.29) m, Swing period time was (0.45 ± 0.03) s, double support period was (25.06 ± 0.09)%, ankle metatarsal flexor maximum angle (4.10 ± 1.20). The peak of the dorsal curvature moment of the ankle joint is (1.52 ± 0.12) N·m/kg. There was no statistically significant ratio of double support period between the affected side and the healthy side in the experimental group ($P > 0.05$), and the difference between the remaining spatiotemporal parameters of the affected side, the healthy

side and the control group in the experiment was statistically significant ($P < 0.05$).

Conclusions: Stroke hemiplegia patients have obvious hanging foot gait, and their walking function is obviously poor with normal people of the same age. Using Karen Rehabilitation System to evaluate the gait of hemiplegia patients with stroke can provide data reference for clinical rehabilitation treatment.

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228 | Research on gait kinematics parameters of unilateral transtibial amputees after wearing prostheses

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Background: Human gait analysis and research has been for more than a century. At present, the traditional gait analysis system cannot simulate the real environment in the analysis, so in gait analysis, there are some limitations. The computer-aided rehabilitation environment (Computer Assisted Rehabilitation Environment, CAREN) is a rehabilitation system composed of motion platform, virtual environment (projection screen), motion capture and central control, which, compared with the traditional gait analysis system, Able to simulate the external environment in a real time, the system is widely used in amputees abroad. This study used the gait evaluation system to test the gait kinematics parameters of patients with unilateral calf amputation after wearing prostheses, and to compare and analyze them.

Methods: 9 patients who were amputated in the middle of unilateral calf but were fitted with prosthesis were set up as prosthetic group, 9 cases of healthy subjects were selected as standard group, and the gait kinematics parameters of 2 groups of subjects were collected, processed and analyzed by CAREN gait evaluation system.

Results: The gait phase index of prosthetic group was (0.88 ± 0.04), the step length of prosthetic side, the percentage of support period, the maximum stretching angle of hip support period, the maximum buckling angle of knee joint support period, the angle of dorsal flexor of ankle joint, the angle of maximum dorsal flexor in ankle support period, the maximum metatarsal angle of ankle joint support period and the healthy side, the differences were statistically significant ($P < 0.05$). The walking speed, gait period, span step length, percentage of support period, hip foot and floor flexor angle, maximum stretching angle of hip support period, maximum buckling angle of hip support period, knee bending angle, ankle foot heel angle, maximum metatarsal angle, ankle joint and shoulder support period, The difference between the maximum dorsal flexor angle and the two-sided mean of the standard group in the ankle joint support period was statistically significant ($P < 0.05$).

Conclusions: The gait phase of the unilateral calf amputee was (0.88 ± 0.04) after wearing the prosthesis, the kinematics parameters of the prosthetic lateral ankle joint were significantly weaker than that of the self, and the spatiotemporal and kinematics parameters of the prosthesis group were significantly weaker than that of the standard group.

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229 | Joint replacement of epidemiological investigation and prevention of case-control study

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Objective: Explore and hip arthroplasty clinical-epidemiological characteristics of knee joint replacement.

Methods: After examining the rehabilitation medicine in the related literature at home and abroad, based on the hospital in Dalian between April 2016 and March 2019 (double hip artificial hip replacement in 3, 41 cases had unilateral artificial hip replacement, a total of 44 cases, during this period were 18 (9 cases of bilateral knee joint replacement; 9 cases of unilateral knee arthroplasties) for knee arthroplasty patients as the research object. USES the ratio of 1:1 case-control studies, including: match than bonding years of age, replacement parts, whether associated with cerebral infarction and death, leading to bedridden state diseases such as diabetes, whether there is a movement disorder four factors. With the individual case group standards, according to the ratio of the above four factors. Basis for: individual age and cases of the control group of individual age difference between plus or minus 5 or less; Is associated with hypertension, coronary heart disease, cerebral infarction, and lead to high blood coagulation state of diseases such as diabetes; Broken parts of the same or similar; If multiple fractures and fracture position

is similar. Resulting in 21 cases, whether preoperative use of low molecular heparin as exposed factors, using the chi-square test method.

Results: Through the analysis found that male and female sex ratio in double hip artificial hip replacement patients was 67%, 33%, and in patients with unilateral artificial hip replacement sex ratio was 20%, 80%, double hip artificial hip replacement patients age proportion, 30-45 years old, 45-60 years and 33% at the age of 60-75. Unilateral artificial hip replacement patients age proportion, accounted for only 2% of 30-45 years old, 45%-10% under the age of 60, 60-75 years old and over 75 higher percentage, 39% and 49% respectively, with bilateral knee replacements and unilateral knee joint replacement ratio of 50%, for knee replacement of male patients was 16%, the female patients was 83%. Accounted for 16%, 50 to 60 patients aged 60 to 70 patients (33%), 50% patients over the age of 70. The proportion of women is higher in knee joint replacement; Knee aged over 70 accounts for half of the total. 21 by cases and SPSS calculation bear fruit can see $P > 0.05$, the OR value between 95% confidence region showed that for patients with bilateral artificial joint replacement, the long-term use of calcium products, not the protection factor to prevent joint damage.

Conclusion: Women in patients with artificial hip and knee arthroplasties account for larger proportion, based on that women are more should pay attention to arthritis, hip fracture, bone tumor and disease prevention.

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230 | Gait analysis of unilaterally-knee-amputated patients with C-leg intelligent knee prosthesis walking on flat ground

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Purpose: Lower limb prostheses offer physical and psychological compensation to patients with amputation. However, their physiological compensation of lower limb prostheses is particularly important in their daily life. This paper analyzes the gait of unilaterally-amputated patients on flat ground with C-leg intelligent knee prosthesis, aiming at the effect of the device on patients with unilateral knee-amputation.

Methods: Acquisition and analysis via the CAREN system: Firstly, it combines video with gait GOAT system. The tester's walking motion on flat ground will be captured and collected in 3-dimension at real time. The sampling frequency of the pressure plate is configured to 1000 Hz and Vicon motion capture frequency 120 Hz. The frequency of low channel is set to 6 Hz. Human motion model of lower limbs is chosen by D-Flow software. Results The maximum phase symmetry index is 1.05 when the tester walking on the device on flat ground, minimum 1.00, and the average value (1.02 ± 0.02). The phase symmetry index of a normal person is (0.95 ± 0.05). It can be concluded that the deviation indicators between the gait of unilaterally-amputated patients and normal people were 7.3%. The average swing length of the prosthetic side is $(0.5 \pm 0.12 \text{ m})$. The average swing percentage of the prosthesis is $(33.32 \pm 1.95\%)$. When the heel lands, the average hip flexion angle of the prosthesis is $(8.00 \pm 2.92°)$, the average knee flexion angle $(19.47 \pm 6.55°)$, and the average ankle dorsiflexion angle $(11.39 \pm 7.92°)$. The average swing length of the healthy limb is 0.46 ± 0.06 m). When the heel landing moment, the average swing percentage of healthy limb side is $(33.36 \pm 1.93\%)$ and the average hip flexion angle $(6.50 \pm 3.20°)$, the average knee flexion angle $(12.29 \pm 3.82°)$, and the average ankle dorsiflexion angle of healthy limb side $(11.39 \pm 7.92°)$. It can be concluded that the prosthesis side is larger than healthy side, including the swing length, the hip flexion angle, and the knee flexion angle of the prosthetic side when the heel lands. But the prosthesis side is smaller than the healthy one when the heel lands and there was no significant difference between the prosthesis and healthy side on the percentage of oscillation.

Conclusions: The gait of the prosthetic and healthy side is close to that of normal people when the tester walked on the device on flat ground. But the hip joint of the prosthetic side of the patients was slightly backward. The effect of knee flexion and ankle flexion is slightly worse than that of normal people and the swing frequencies of the prosthetic and healthy side are very close.

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231 | The effect of intervention training on the functional outcome of obese college students

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Objectives: In the past three years, physical condition of the college students having attended obese evaluation by BMI is not optimistic, especially that of boys, 52.3% failed; the obesity rate of girls is lower than that of boys, 18.7% failed, which is far higher than the National Standard for Physical Health of Students. The research of this subject aims to better understand the physiological and

biochemical changes of Obese College students and master the changes of physiological and biochemical indicators of Obese College students, after which the intensity and load of intervention training were formulated according to these changes.

Methods: Volunteers, 10 boys and 10 girls from obese college students participated in the study. The experimental period was 16 weeks, three times a week for intervention training, 60 minutes each time, a $\bar{x} \pm$ SD comprehensive calculation and analysis is carried out every four weeks. Training content: 1000 m for boys and 800 m for girls, 30 minutes for AEON bicycles and 10 minutes for AEON rowing machines. Interleukin-6 (IL-6) is selected as the test index. IL-6 is a cytokine released from skeletal muscle during exercise, which can regulate cell energy metabolism. Before and after the intervention, the serum creatine kinase CK, lactate LA and tumor necrosis factor TNF-alpha were analyzed, and SPSS22.0 was used for statistics.

Results: After 16 weeks of comprehensive intervention training three times a week for 60 minutes each time, 10 boys and 10 girls achieved significant weight loss effect. The waist circumference of boys and girls changed significantly (± 3 cm), especially abdominal fat reduction effect. The levels of CK, LA, TNF-a, IL-6 and energy metabolism of IL-6 cells were significantly decreased ($P < 0.01$), LA and TNF-a were significantly decreased ($P < 0.05$), IL-6 was significantly increased, IL-6 cells had significant energy metabolism effect and had the effect of promoting abdominal fat reduction.

Conclusions: After three intervening training sessions per week, we can see a good news from the research results: the whole body exercises of bicycle, rowing machine and middle and long distance running by volunteers among obese college students can effectively reduce abdominal fat, visceral fat wrapped in abdominal organs. An effective way to eliminate obesity is exercise. In view of the influence of IL-6 biochemical indicators on obesity, reasonable measures should be taken in diet after exercise.

232 | Research on biomechanical mechanism of fitness walking

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Objective: Walking is an indispensable activity of human life. For most people, walking forward is a simple basic action. Many researches have conducted in-depth studies on the effectiveness of walking forward on human body, but there are few studies have focused on backward walking. In this study, quadriceps tendon force (Fq), knee muscle torque (Mk), patellofemoral joint compression force (PFJCF) and other indicators in forward and backward walking were compared by experimental method. 10 health and physical education college students in southwest university were selected as subjects (Age (21.40 ± 0.62), height (173.6 ± 4.31) cm, weight (65.7 ± 4.22) kg, no recent knee injuries or pain and no professional training in walking backwards).

Methods: Subjects forward and backward on a 10-meter track at a speed of 10 km/h (Equivalent to 2.77 m/s). Kinematic data were collected by Motion Capture, the US Motion Analysis System and Finnish Photocells speedometer. Kinetic data were measured by Kistler force plates. Fq was calculated by the following formula: $Fq = Mk/0.049$ m; PFJCF was mainly calculated by the following formula: $PFJCF = 2F\alpha \bullet \sin(\beta/2)$. Indicators such as PFJCF peak (N), PFJCF relative peak (BW), knee muscle peak torque (Nm), knee muscle relative peak torque (Nm/kg) and knee angle at touchdown were statistically analyzed using Spss19.0 and expressed as $\pm$SD, and these data were tested by Wilcoxon test.

Results: The PFJCF peak, PFJCF relative peak, knee muscle peak torque, knee muscle relative peak torque and knee angle at touchdown of forward walking is ($2\,282.58 \pm 301.36$)N, 4.37 ± 0.47, (139.78 ± 18.25) Nm, (2.21 ± 0.28) Nm/kg and (6.27 ± 3.41)°. Meanwhile, those of backward walking is (2012.57 ± 600.22) N, 3.16 ± 0.96, (115.10 ± 30.02) Nm, (1.85 ± 0.52) Nm/kg and (6.33 ± 3.41)°. In the process of backwards walking, the pace, cadence, stride length was significantly shorter and step time, double FF hold time and the first double support time was significantly longer than those of forward walking. Although the difference between these two situations was not significant, but most of the kinetic index of backward walking is smaller than those of forward walking.

Conclusion: The peak value of PFJCF in the walking supporting phase depends on the magnitude of the ground reaction, the position of the ground reaction vector relative to the knee joint and the angle acceleration of the connecting rod of the lower limbs. Backward walking can be used as an exercise means to alleviate PFJCF to reduce the incidence of patellofemoral pain syndrome.

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233 | Application of intelligent networking technology in automobile development and education

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Introduction: With the rapid development of intelligent and networked technology, intelligent networked automobile technology has become an important product of the Times development. It has become an era of Peugeot and the integration of technological development.

Development: Smart cars will go through two stages. The first stage is the primary stage of smart cars, of auxiliary driving; the second stage is the ultimate stage in the development of smart cars, that is, a complete replacement for human unmanned driving. At the same time, the development of smart cars will go through 5 levels.

(1) No Intelligence: The driver has complete control of the original underlying structure of the car at all times, including brakes, steering gear, accelerator pedals and starters.

(2) Intelligent with special functions: This level of the car has one or more special automatic control functions, through warnings to prevent car accidents in the beginning, can be called "auxiliary driving stage." Many of the technologies at this stage are no stranger, such as the Lane deviation Warning System (LDW), the frontal Impact Warning System (FCW), and the Blind Spot Information (BLIS) system.

(3) Intelligent with multiple functions: This level of the car has a system that combines at least two original control functions, and does not require the driver to control these functions at all, which can be called the "semi-automatic driving stage".

(4) unmanned driving with restrictions: This level of the car can be in a particular driving traffic environment to let the driver completely do not control the car, and the car can automatically detect changes in the environment to determine whether to return to the driver driving mode, can be called "High automatic driving stage."

(5) All operating conditions driverless: This level of the car fully automatic control of the vehicle, the whole process of testing the traffic environment, can achieve all the driving objectives, the driver only needs to provide the destination or input navigation information, at no time there is no need to control the vehicle, can be called "fully autonomous driving stage" or "driverless phase ".

Conclusions: (1) The intelligent future of automobiles will occupy the dominant position of automotive technology, so the content and form of automobile vocational education is bound to change with the development of technology. (2) Digital innovations related to automotive driving will be dominated by automotive manufacturers and primary component suppliers. (3) Automobile driverless technology will be difficult to popularize on a large scale in the next 10 years. Large-scale application will not be achieved until the relevant legal issues are resolved.

234 | Study on body shape measurement and health intervention of Uygur and Li adolescents

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Objectives: China is a multi-ethnic country, and the healthy growth of students of all nationalities is of great significance to improving the overall quality of the Chinese nation. Different peoples have different living and eating habits, so their health status and body shapes are very different. In order to explore the differences in body shape among adolescents under different altitudes, different climates, different diets and living habits, this paper analyzes the body shape of Xinjiang Uygur and Hainan Li students through survey interviews, literature review, statistical analysis and other methods. This study has identified the main factors affecting the differences in the physical form of the students of the two groups, and on this basis, has targeted the effective implementation of secondary school's physical education programs; the enhancement of health education and the improvement of students' nutrition methods.

Methods: The field survey and test of the body shape of Xinjiang Uygur and Hainan Li students were conducted by means of survey interviews and literature data, and T-test was used for statistical analysis and research.

Results: Through the research analysis of the body shape of students from 13-17 years old of two different nationalities, it is found that the body shape growth and development of students of the 13-17 age group of both nationalities is within the normal range. However, in the case of the Xinjiang Uygur students aged 13-17, the three indicators of height, weight and chest circumference are higher than those of Hainan Li students of the same age group.

Conclusions: Different customs and habits, as well as eating habits and body shape development levels, are directly related to this difference between the two groups. Hainan Li

students live in mountainous areas or rural areas. The dietary habits of young students, the structure of nutritious meals and physical exercise measures need to be further improved. This is also the reason why Hainan students' physical form is at a disadvantage. Comprehensively improve the physical fitness of Hainan Li students will contribute to achieve the ultimate purpose of promoting the healthy growth of the majority of young children in China.

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235 | Loneliness and the risks of psychological distress among migrant workers from gender difference perspective: Evidence from China

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Background: Rural-to-urban migrant workers (MWs) are an increasing population in China, accounting for roughly 20.6% of China's total population in 2017 and they are considered as a large group of vulnerable people. Because of MWs' disadvantaged social and economic conditions, they have higher risks to experience various psychological distresses. With regard to the prevalence and correlates of loneliness symptom, few previous studies have investigated gender difference. Examining the gender difference helps us to better understand MWs' health situation, which beneficial to address the risks of psychological distress among migrant workers with more targeted initiatives. Therefore, it is necessary to further analyze the gender difference on loneliness among current Chinese MWs.

Methods: This study analyzed 874 samples who work as MWs in urban China, emphasizing gender differences in the prevalence and correlates of loneliness among Chinese MWs. A three-level sampling procedure was carried out, including province, cities and participants. All participants were recruited and administrated with standardized questionnaires to collect data on sociodemographic, migration-related, job-related and social-support characteristics.

Results: Loneliness was measured with a single-item self-report question "Do you feel lonely often?". It showed that 42.6% of male MWs said they often feel lonely in the society and the result of female MWs was 32.5%, which means the incidence of loneliness in male MWs is much higher than that of female MWs. Besides, gender difference in prevalence of loneliness presented significance in statistics ($P = 0.03 < 0.05$). Compared with female MWs, male MWs are at greater risk for loneliness (OR = 0.647, Coefficient = -0.512. $P = 0.03$). About correlates of loneliness, results showed that loneliness among male MWs was significantly related to such factors in the questionnaire: "an educational attainment of university and above", "recently changed jobs", "don't have any professional certificate" and "always consider oneself as a farmer". However, for female MWs, loneliness was associated significantly with "monthly income below 2000 RMB", "didn't use public cultural facilities" and "always consider oneself as a farmer".

Conclusions: Evidence from gender differences in mental health is not yet conclusive in the Western literature, not mention too much less be known about gender differences in migrant workers' mental health in China. This research promotes understandings of gender difference among Chinese MWs' mental health. Based on the analysis above, the gender difference on the risks of psychological distress among MWs inspired us significantly, benefiting to reduce the negative consequences of loneliness. Although addressing loneliness symptom among MWs is pressing and of great significance, policy makers and health-care providers should pay more attention to different needs of both sexes before taking timely action.

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236 | Research on the construction of early warning mechanism of college students

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Objectives: By constructing the early warning mechanism of college students' psychological crisis, they provide professional and timely psychological assistance for college students with psychological crisis problems, effectively prevent and resolve psychological crisis, enhance the psychological adaptability of college students, reduce the harm and loss caused by emergencies, and effectively solve The current problem of mental health education in colleges and universities.

Methods: Constructing an early warning mechanism for college students' psychological crisis, and establishing a

system for effective prevention, early warning and pre-control of psychological crisis. With the help of psychological crisis early warning methods, the information of susceptible populations of psychological crisis can be screened out through certain measures, monitoring and analysis, timely discovery and identification. Potential or realistic psychological crisis factors, assessment of consequences, timely and accurate crisis warning, development of crisis emergency plans, and scientific assistance measures to minimize losses.

Results: First, it is necessary to establish a school-led hierarchical early stage psychological crisis early warning management system to build a psychological safety "protective net" for college students. The poor students, freshmen, graduates, loveless students and other groups or non-specific individuals with poor interpersonal relationships and behavioral behaviors are the key early warning targets, and the psychological archives and psychological crisis early warning database are established. The second is to establish a complete psychological crisis early warning support system based on family and society, and build a "separation zone" for college students' psychological security. To construct an early warning mechanism for college students' psychological crisis needs to fully integrate social resources, and it needs to get parental cooperation and social support. The third is to establish a psychological crisis early warning prevention and control system with the psychological adjustment of college students as the core, and build a "firewall" for college students' psychological security. To build a warning mechanism for college students' psychological crisis, the key is to start from the students themselves, strengthen the ideological and political education of college students, adhere to the "people-oriented" education principle, establish the interactive mechanism of the ideological and political education of college students, and guide students to establish a correct outlook on life, values and occupations. View and marriage and love.

Conclusions: Psychological crisis refers to the state of serious psychological imbalance that occurs when people face sudden or major events that exceed their ability to cope and cannot be resolved through normal methods. Constructing the early warning mechanism of college students' psychological crisis is conducive to strengthening college students' resistance to external risks and deepening mental health and ideological and political education. Constructing the early warning mechanism of college students' psychological crisis is conducive to cultivating high-quality qualified talents and guiding college students to establish positive and objective personality qualities. Constructing the early warning mechanism of college students' psychological crisis is conducive to preventing and eliminating the psychological crisis of college students, and strengthening college students to cherish life health education.

237 | Research on the construction of college students' mental health education guarantee mechanism

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Objectives: At present, strengthening the mental health education of college students is an important task facing colleges and universities. Based on the importance of college students' mental health education and its development status in China, colleges and universities should explore the construction of college students' mental health education guarantee mechanism according to their physiological and psychological development characteristics, and use mental health education methods and means to ensure the development of students. Good psychological quality ensures the comprehensive and harmonious development of students' physical and mental quality and comprehensive improvement and then proposes a sound psychological health education guarantee mechanism for college students.

Methods: It is necessary to build a mental health education faculty team with full-time teachers as the backbone and supplemented by part-time teachers, with specialization, professional complementarity, relatively stable and good quality. Fully mobilize the initiative and enthusiasm of all faculty and staff to participate in mental health education, and pay attention to the training of mental health education for class teachers, counselors and other cadres and teachers engaged in ideological and political work in colleges and universities. It is necessary to implement the special work funds for mental health education, establish a relatively independent mental health education consulting institution and the hospital's second-level psychological counseling station, build a mental health education quality development base inside and outside the school, and cultivate excellent work cases for college students' mental health education.

Results: Constructing the psychological security education guarantee mechanism for college students is an institutional guarantee to strengthen the mental health education of college students. Establishing and improving the psychological health education guarantee mechanism for college students is the main guarantee to promote the comprehensive development of students' personality, learn to adapt to survival, forge ahead, give full play to their potential and enhance their social adaptability. The psychological security education guarantee mechanism for college students is an important guarantee for promoting the all-round development of college students and improving their psychological quality.

Conclusions: Carrying out mental health education for college students is the need of healthy growth of college

students and an inevitable requirement for promoting quality education for college students. Strengthening the mental health education of college students is an urgent requirement for social progress and the development of the times. It is also an important guarantee for promoting the healthy development of college students' physical and mental health. It is also an important manifestation of the fundamental tasks of practicing the morality of the people in colleges and universities. Therefore, colleges and universities should conduct practical exploration and theoretical innovation in terms of content, form and security, actively guide college students to maintain a healthy and up-to-date psychological state, and establish multi-angle and all-round psychology. Health education system, build a psychological security education guarantee mechanism for college students.

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238 | Body shape detection and medical sports intervention research of 17 to 20 years old Mongolian college students in Tianshan area

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Objectives: Most of China's grasslands have left the footprints of Mongolian herders. Therefore, Mongolians are known as the "children of the grasslands." The research group focused on the investigation, statistical analysis and comparative study on the data of the body shape of Mongolian young students, and found out the age characteristics, national characteristics, advantages and gaps of the development of Mongolian students' body shape, and proposed strengthening and improve the specific conclusions and recommendations of the medical and sports work of Mongolian schools.

Methods: According to the requirements of the "Chinese Student Physical Health Inspection System", 400 young Mongolian students aged 17-20 in five colleges and secondary schools in Bortala Mongol Autonomous Prefecture, Bayingolin Mongolian Autonomous Prefecture and Urumqi City were tested and collected.

Results: There was no significant difference in height, weight, chest circumference and vital capacity among the four indexes of 17-year-old male and female students except that the female chest circumference was significantly higher than that of 17-year-old female students of Han nationality ($P < 0.01$). Compared with male and female college students of Han nationality and Mongolian nationality (18-20 years old), except the chest circumference index of Mongolian college students was significantly higher than that of Han nationality ($P < 0.01$), there was no significant difference in the other three indexes ($P > 0.05$). The chest circumference and vital capacity of female students were significantly higher than those of Han students ($P < 0.01$). There was no significant difference in height and weight ($P > 0.05$).

Conclusions: The height, weight and chest circumference of young men and women of Mongolian nationality in Xinjiang ranged from 17 to 20 years old, and gradually increased with age. Among them, the growth rate of female students is slow from 17 to 18 years old, and relatively large after 18 to 19 years old. Boys grew at a uniform rate. The increase of vital capacity index was basically the same as that of three morphological indexes, and the systolic and diastolic blood pressure indexes were within the normal range.

Suggestions: Mongolian young male students have a relatively high degree of physical fullness, but their upper limb strength is insufficient. They should focus on the upper limb strength, especially the explosive strength of upper limbs in medical sports and exercises. Make strength, speed, speed endurance and its body shape, function of the current level of adaptation.

Governments at all levels should attach great importance to and strengthen the work of physical education and health care in Mongolian schools, closely integrate the reform of physical education and health curriculum, carry out targeted medical sports and exercise, and further enhance the physical health level of Mongolian College students.

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239 | Research and application of intelligent practical training management platform

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Objectives: The teaching link of practical training is more and more important to the improvement of students' skills in vocational colleges. In particular, automotive maintenance technology-related majors need a variety of skills training and promotion of the practice. The type and function of practical training room is becoming more and more complex. How to manage and effectively use these specialized training rooms, optimize the combination of many practical training projects, improve the skill level of vocational college students, has become an important topic in the teaching management of vocational colleges.

Methods: Design a set of integrated management software system, so that it has a practical training room integrated resource management, curriculum management, user management, performance statistics and analysis, teaching data analysis, and other powerful practical training room integrated management functions.

The intelligent platform mainly includes the intelligent control system of the training room and the large screen management system of the training room. To realize the intelligence and informationization of practical training teaching, intelligent control System includes 16 components. The large screen management system of the training room is through the integration of professional hardware system, which can realize the implementation control and interaction of teaching resources, 3D simulation software and teaching video.

This intelligent control system integrates the Internet of Things technology, RFID radio frequency technology and various systems of the training management center organically, realizes the intelligent and network centralized management of the traditional training room and improves the use efficiency of the training room. Specific functions are as follows:

(1) Orderly management and efficient application of practical training resources; (2) Integration and sharing of practical training experimental resources, training system management and style characteristics display; (3) Unified training equipment and material management; (4) Curriculum arrangement, practical training monitoring.

Results: The construction of intelligent platform in the training room will be a development direction, which will be widely used in the practical training experiment teaching of vocational colleges and even universities. The development and use of intelligent training teaching platform can easily realize the comprehensive control and distribution display of teaching video, teaching resources and simulation software in practical training room.

Conclusions: This kind of intelligent, integrated practical training teaching management platform has gradually become a direction. It is necessary to develop and design an integrated platform to achieve effective high-speed sharing of resources. In fact, more and more vocational colleges will adopt this design concept to decorate the practical teaching base, this centralized management speech to maximize the effectiveness, but also make more and more students benefit, skills and comprehensive level will also be expanded and improved.

240 | Effect of financial constraint on rural residents' health: Evidence from rural China

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Objectives: The aim of this paper is to explore the impact of credit constraints on rural farmers' health status. Since the health conditions of farmers greatly affect their economic activities and productivities, it is very crucial to look at some hazardous factors that always lower their welfare and hence indirectly affecting their productivities. Here this study focused on the impact of credit constraints inform of credit rationing that greatly hinders them from accessing their medical services hence affecting their welfare. By using the Chinese household's income survey (CHIP) dataset which was conducted in 2014, some results of the impact of credit constraints on the health conditions of the farmer in rural China will be obtained.

Methods: Ordered probit model with instrumental dummy variable was used for this study, it solved for selection bias and omitted variables problem. It is the best especially when accounting for the ordinal nature of farmers' health status in health condition modeling. This model also discerns unequal differences between ordinal classes in the dependent variable. Additionally, it also requires smaller samples when compared to unordered response models. Specifically, this model is built around the notion of a latent variable as a dependent variable, and the independent variables are factors that determine the observed ordinal dependent variable.

Results: The results of the prediction of the outcomes of health status of farmers using the average marginal effects of rationing on rural farmers' health status show that the average predicted probabilities of rural farmers' having excellent health status after being credit rationed is only 0.3% compared to the farmers who are not credit rationed and the average predicted probabilities of rural farmers having poor and worst health status is over 56% and 26.2% after being credit rationed respectively. These results imply that under credit-constraints, the majority of rural farmers' health status may not be in a good status since they are unable to access the health services, and hence their physical capabilities and their education cannot be fully employed.

Conclusions: The results imply that under credit constraints, rural farmers cannot be in good health-status since they cannot be in a position to access health services. That is a good indicator to policymakers in China who aim to improve rural farmers' health status, agricultural productivity, and the welfare of rural farmers. Therefore, in order for farmers to have

better health conditions, credit policies should be relaxed by both the formal and informal financial institutions in order for their services to reach the poor and underserved population in the rural area.

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241 | Carbon trading mechanism in the schema of green economy and its impact on health & environment: An empirical study

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Objectives: This present study is aimed at exploring and studying a carbon trading mechanism that is most suitable for countries and regions in the schema of green economy, together with analyzing its impact on health and environment.

Methods: We designed an empirical study model based on green economy methodology and systematic convenient sampling approach; we conducted simulation model of carbon trading mechanism in different countries based on Multi-Entity model, followed by a dynamic bottom-up empirical model accordingly constructed, which involves all sectors of the economy and various entities in a country.

Results: We found that the carbon trading mechanism can effectively promote carbon emissions reduction in countries, especially those developing; carbon trading exerts a positive effect on carbon emission reduction and energy structure improvement, yet at the same time casts a certain negative impact on the economy growth; for unified price auctions quota allocation mechanisms, the impact of the carbon emission allocation policy on the impact of the economy is relatively weak, while the discriminatory price auction is stronger for economic shocks and distribution policies; for the reduction of the total carbon allowances, when the quotas are more strictly controlled, the negative impact of carbon trading on GDP gradually rises, and the carbon emission reduction effect increases significantly (as the total carbon allowance decline rate increases by 0.036 from 0.0045, the GDP negative impact ratio increases from 0.379% to 1.276%, the total carbon emission reduction ratio from 1.051% to 2.289%) ; the empirical model results show that despite the uniform price by the auction method is slightly lower than the carbon price under the discriminatory price auction, but the carbon trading price will basically or gradually converge in the effective range of 35-45 dollar/carbon, and the carbon trading mechanism implemented during this period most likely reaches the ideal carbon emission reduction effect.

Conclusions: For the total supply of quotas under total control, the total amount of quotas is decremented. The ratio should be set at the same time considering its carbon emission reduction effect and its negative impact on economic growth. A reference reserve price must be designed in accordance with the effective trading range of carbon trading prices to conduct macro control over the carbon trading price, thereby maintaining the stability of the carbon market and avoiding speculation.

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242 | Research on mental health education in primary and middle schools

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Objectives: Carry out mental health education in primary and middle schools, grasp the psychological development tasks of students of different ages according to the characteristics and laws of students' physiological and psychological development, apply the knowledge theory and method skills of mental health education, pay attention to students' psychological harmony and health, strengthen humane care and psychological counseling To enable students to learn and live, to correctly understand themselves, to improve their self-help and self-education skills, to enhance their ability to regulate emotions, to withstand setbacks, to adapt to the environment, to cultivate students' sound personality and good psychological quality, and to promote their comprehensive and harmonious development of mind and body.

Methods: To carry out mental health education in primary and secondary schools, we must take students' development as the foundation, follow the laws of students' physical and mental development, adhere to the combination of science and effectiveness, adhere to the combination of development, prevention and crisis intervention, and adhere to the

combination of all students and individual differences, and adhere to the combination of teachers' dominance and students' subjectivity, and effectively cultivate students' self-help and self-maintenance of their mental health awareness and ability, and improve students' psychological quality and mental health.

Results: Strengthen the leadership and management of mental health education in primary and middle schools, formulate rules and regulations, clarify responsible departments and responsible persons, and support and guide mental health education in primary and middle schools. Schools must ensure the time of mental health education through a variety of ways and methods, combined with the actual teaching and learning. Mental health education is a very professional job. It is necessary to strengthen the construction of mental health education teachers and gradually integrate full-time teachers in mental health education. Vigorously carry out psychological health education teacher training, and effectively improve the basic theory, professional knowledge and operational skills of mental health education teachers. Pay attention to teachers' mental health education, provide necessary conditions for teachers to learn mental health education knowledge, and effectively improve their mental health and ability to develop mental health education.

Conclusions: Strengthen the research on mental health education in primary and middle schools, incorporate mental health education into educational scientific research planning, enrich and perfect the theory of mental health education in practice, continuously improve the scientific level of mental health education, and provide theoretical basis and scientific basis for mental health education practice. By strengthening the mental health education in primary and secondary schools, comprehensively promote quality education, enhance the pertinence, develop students' psychological potential, improve students' mental health, And to avoid the influence of various unfavorable factors on students' mental health, and to cultivate socialist builders and successors who are fully developed in the spirit of physical and mental health, social responsibility, innovative spirit and practical ability.

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243 | Wireless dragon boat motion capture system

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Objectives: Usually, in the process of motion capture of a sports technique, a mark is attached to each joint of the athlete, and then, the camera is used to take pictures and images of the motion track, and the 3D motion data are stored in the computer. Finally, the data processing software is used to process and analyze the motion data. Traditional motion capture technology that captures clear motion trajectories. However, this method requires a large amount of equipment to be prepared in the early stages of the experiment. This paper studies the wireless dragon boat motion capture system.

There are many wireless communication solutions for wireless sensor networks, including technologies such as Zig Bee, Wi-Fi, and infrared. Among them, infrared technology is generally applied to point-to-point communication, which is affected by occlusion and is difficult to move, and cannot be flexibly built into a sensor network; Now, Wi-Fi is being widely used, but it still has disadvantages such as high cost, high power consumption, and poor security performance. However, Zig Bee technology has great prospects in wireless sensor networks due to its economical, reliable, and easy networking. Zig Bee is a wireless standard protocol based on IEEE 802.15.4.

The system is mainly divided into two modules to achieve functions: sensor network module and data processing module. The sensor network module is mainly to set up a wireless sensor network, and collect the ship motion data collected by the nodes in the network, and summarize them to the data processing module. The data processing module mainly analyzes, converts, and eliminates the original data collected by the sensor network module, and finally converts the ship paddle motion data into a ship paddle moving image.

In this article, we use sensors to handle motion sensing. We measure the actual blade angle using a gyroscope with a Kalman filter and an accelerometer, measure the distance of the motion using the data from the accelerometer, and measure the penetration depth.

Methods: In the hardware: DC-DC converter, water level sensor, IMU sensor (MPU-9150), Wi-Fi module and MCU are installed, they are installed inside the paddle and sealed, and the exterior of the paddle is added with waterproof coating floor. Software: Using the Z-Stack system solution, Z-Stack is a 2.4 GHz IEEE 802.15.4/Zig Bee system-on-chip solution developed by TI/Chipcon. It is fully compatible with the IEEE 802.15.4 - 2003 protocol specification. The motherboard control software interprets the overall data transfer structure. To know the tilt of the paddle, the Kalman filter is used to estimate the roll and pitch values for the gyro sensor values and acceleration sensor values. Test data includes the distance traveled by the paddle, the angle of the paddle (slope) and the depth of the paddle.

In this paper, the Kalman filter is used to estimate the tilt posture of the paddle. The Kalman filter updates the Kalman gain using the initial values, calculates the estimated value

and the estimated error, and finally updates the error covariance, and the estimated value is fed back for Kalman gain update. In order to know the slope of the paddle, we need the values of Roll and Pitch, so we use the Kalman filter to get the Roll and Pitch values. Measurements were made using Matlab / Simulink.

Results: 1) Water Level Sensor

The resistance of 20 cm water level sensor varies in the range of 260 [Ω]~1500 [Ω]. The resistance of 30 cm water level sensor varies in the range of 290 [Ω]-2500 [Ω]. The resistance range varies linearly. The lower the water level, the higher the output resistance. The higher the water level, the lower the output resistance. Both water level sensors can respond to "water level", "load" and "pressure".

2) Test data transmission and operation

Data transmission between motherboard and mobile APP is tested under Wi-Fi condition. ASCII and HEX values are separated to check whether the collected data are properly transmitted. The results show that the maximum frame rate of the system can reach 50 fps, but considering the relationship between the input and output of sensor data, the frame rate of 24-35 FPS is adopted.

3) Measuring the reaction rate of a single sensor

In order to know whether "gyroscope sensor" and "acceleration sensor" can achieve real-time response, we measured the response speed of the sensor, and measured the time when "mobile APP" received the data of "sensor". Acceleration and gyroscope sensors receive data in less than 10 ms.

4) Reaction Rate Measurement of Motion Platform

All motion platforms are completed in 100 milliseconds, and it is no problem to judge the response time from sensor data output to mobile platforms.

5) Testing device and application behavior

In the initial home screen, menus such as "Options", "Previous Records" and "Training Start" are provided to display the basic information of the propeller at the beginning of training. In training, the "current speed", "cumulative time", "cumulative distance", "rendering speed" and "trajectory" of the propeller are displayed, and the evaluation maps of "depth", "inclination" and "travel distance" are also shown for the motion of the propeller. Through this system, we can evaluate the trajectory of the Dragon Boat athletes' oars and correct their movements accordingly.

Conclusions: Understand and analyze the basic principles and characteristics of sensor operation required by this system, and select the appropriate sensor. This paper introduces the related background knowledge of wireless sensor networks, and studies the operating system Z-Stack protocol stack of Zig Bee wireless sensor network solution to understand its structure and development principles, and prepare for subsequent development. Design and implement the function of the sensor network module of this system. Design the sensor node module and sensor module

circuit; use Zig Bee's technology for networking and communication. Task management is performed through the Z-Stack protocol stack, and sensor data acquisition, wireless communication, serial communication and other functions are implemented on the protocol stack. A motion sensor is mounted on the blade of the dragon boat, and the original shape and structure of the paddle are guaranteed as much as possible, and all the equipment is waterproofed. Data transmission is transmitted to the mobile APP using wireless signals. During the visualization process, the received data are sorted and analyzed, and the slope, travel distance and depth of the paddle are evaluated by comparing the data to predetermined platform data. In summary, we have developed a modular sensor system for identifying the pitch, travel distance and depth of the paddle, as well as the mobile program for monitoring and recording sensor data values in real time.

244 | New mechanism of health tourism services under the background of blockchain technology

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Objectives: At present, the main way to purchase health tourism services is to purchase health tourism products. People can purchase health tourism products and services through money directly. To meet the requirement of high-quality services of health tourism, large monetary expenditures are often required, but the existing pension and social security system have no more income or savings to meet this demand. The aim of this study is to find some new paths to purchase health tourism services.

Methods: Another path to purchase health tourism services is to barter thing for another, that is, bartering one's own time for services provided by another, which is worth exploring. In brief, if you have time, you can do a voluntary service in the health tourism service agency in exchange for the same time service or preferential service provided by the health tourism agency for you or your designated person in the future, which is equivalent to "store" time into the health tourism organization, and then "take it out" when you need it. This is similar to unpaid blood donation. People who have participated in blood donation without compensation will have a blood donation certificate. If you or your family have an accident and need a blood transfusion, you can get priority with the blood donation certificate. With so much time provided, the service capacity is naturally enhanced. A new mechanism is required to enhance people's willingness to "store" time and protect their rights to "take it out". This study mainly adopted theoretical research methods for exploring some new paths of health tourism services based on the blockchain technology.

BCPT Basic & Clinical Pharmacology & Toxicology

Results: Due to the shortage of purchasing health tourism products with money, a new way to purchase health tourism products was found, namely "time for service", including consensus mechanism, information security mechanism.

Conclusions: Under the background of blockchain technology, the consensus mechanism, information security mechanism, reward mechanism and operation mechanism of health tourism services provide guarantees for the rights and interests of people who pay time, making the new path of "time for service" possible. Specifically, consensus mechanism of blockchain eliminates the possibility of manual modification and falsification of data. Based on these credible data, the smart contract enforces pre-set rules and provisions without human manipulation. This will ensure that the path bartering one's own time for services can be implemented.

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245 | Parameter matching optimization of composite energy storage system for urban rail train based on fast and elitist multiobjective genetic algorithm NSGA-II

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Objectives: Urban rail transit can solve the problems of large urban population and inconvenient transportation in China. Compound on-board energy storage system can meet the traction requirements of vehicles well, and recover energy in the braking stage of vehicles to improve energy utilization. However, there are many problems in the composite on-board energy storage system, such as power and energy demand, battery aging, maintenance cost and so on. Therefore, a NSGA-II algorithm is proposed to optimize the parameters matching of the composite energy storage system for urban rail trains.

Methods: The NSGA-II algorithm with improved elite retention strategy was used to optimize the parameters matching of the composite power supply. The objective of optimization was the replacement cost and economy of the composite power supply. The method increases the vertical diversity of searching and avoids genetic precocity. NSGA-II algorithm calls the simulation model of composite power supply in real time, and optimizes the parameters of composite power supply and control parameters simultaneously. The Pareto set of optimization objectives and the corresponding parameters and control strategies of composite power supply are obtained.

Results: NSGA-II algorithm can optimize the parameters of the composite energy storage system and improve the performance indexes of the train and the composite power supply. It not only greatly reduces the capacitance of the composite power supply, but also reduces the total energy consumption of the system, so that the multi-component energy loss caused by the multi-power source system can be effectively controlled. Among them, the total capacitance is reduced by 12.1%, the battery life is prolonged by 18.86%, and the energy storage of the optimized composite power supply is increased by 17.6%.

Conclusions: NSGA-II algorithm is used to solve the multi-objective joint optimization problem of composite energy storage system, which aims at vehicle economy and replacement cost of composite energy storage system. The algorithm can call the working condition model of the composite energy storage system in real time, and read the simulation results for further processing. According to the Pareto set of the two objective values obtained by the algorithm, the initial cost, average daily cost and battery life mileage of each solution in the Pareto set are further compared and optimized, and the final solution is obtained. The final matching parameters significantly reduce the replacement cost of the composite energy storage system without reducing the economy of the whole vehicle. At the same time, the initial cost and other indicators also achieve satisfactory results.

246 | Collaborative innovation drive strategy of foshan city: A gulf-metropolitan-based model

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Objectives: This present study is aimed at studying the innovation drive development strategy of Foshan city from the Gulf-Metropolitan perspective.

Methods: We constructed a complete information dynamic model, established the game of economic cooperation and cityization between Guangzhou city and Foshan city, and analyzed the game process of the transformation of the Gulf-Metropolitan system. The process of renting and the sub-game refinement equilibrium situation under finite repeated games and infinite repeated games were both further discussed.

Results: We found that the equilibrium result of the finite repeated game and the balanced result of the one-time game were in an uncooperative or non-cooperative matrix, which indicates the cooperation between Guangzhou city and Foshan city must go beyond such inefficiency, and build up the cooperation between the two parties; a third-party collaborative innovation-driven organization is needed to effectively supervise and manage the overall layout and benefit distribution of the cityization; a third-party innovation coordination organization with strong management and supervision is likely to bear a short-term opportunistic tendency in the face of unequal administrative division and regional disparity; establishment of third-party collaborative innovation-driven organizations must carry out the two-phase strategic penalty scheme by designing appropriate management and supervision mechanisms thereby to achieve the objective of a win-win cooperation.

Conclusions: In the context of the Gulf-Metropolitan zone of Guangdong, Hong Kong and Macao, Foshan city should adopt and apply the collaborative innovation drive strategy to achieve the objective of a win-win cooperation and co-ordination with the cityization process. It is necessary to establish a third-party collaborative innovation drive organization with the absolute authority, by means of which to promote the Gulf-Metropolitan zone innovation and the construction of industrial clusters, docking the Guangzhou-Shenzhen Science and Technology Innovation Corridor, and strive to create an internationally competitive industrial system, giving full play to Foshan's manufacturing advantages , together with realizing the transformation and upgrading of Foshan's economy from high-speed growth to high-quality development.

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247 | Application of wiring diagnosis teaching system in automobile maintenance technology

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Objectives: In the teaching of automobile maintenance technology, the wiring diagnosis system has the characteristics of strong function, and can be widely used in the teaching process of electrical system maintenance.

Methods: The wiring diagnosis system is a computer wiring diagnosis system specially designed to train students to read the control circuit of the system, to wiring the system and not to damage the components and their joints. It is suitable for students to carry out electronic control system of gasoline engine, automatic air conditioning system electronic control system and other circuit diagram reading and wiring training.

The main technical parameters of the system are as follows: (1) in the Gasoline engine electronic control system, automatic air conditioning system electronic control system and other teaching board on the basis of removing all electrical connectors, increase the corresponding control system and software management system, can diagnose whether the student wiring is correct; (2) equipped with wiring diagnostic module, The diagnostic module can communicate data with PC computer; (3) the terminal is installed in the vicinity of each component in the system to measure the terminal voltage of component.

Results: This teaching system greatly enhances students ' ability of their own hands, and to solve problems independently. In operation, in order to ensure that the line connection is correct and to avoid component damage, the system is equipped with wiring diagnostic function, after the wiring is completed, the system will automatically check whether the wiring meets the requirements.

(1). If the wire is right, the computer screen will display the "correct" test results (pin button is green);

(2). If a wire is leaked, the computer screen will display the "missed" test results (pin button is yellow), click on the Pin button, the screen will show that the pin should be connected to that pin and the actual connection status;

(3). If there is a wiring error, the computer screen will display the "wrong" test results (pin button red), click the Pin button, the screen will show that the pin should be connected to that pin and the actual connection status;

(4). Only when all circuit connections are correct will the computer allow the starter Teaching board to run the experiment.

Conclusions: This kind of wiring diagnosis teaching system has the advantages of intuitive, which is not available in the whole vehicle system, and also has the advantage of practical connection, which is not available in other teaching equipment. The hands-on connection and operation of students can also greatly enhance students ' mastery and deepening of the principle, which can play the role of combining theory with practice.

248 | Investigation and analysis of amateur volleyball activities—For example Beijing Sports University

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Objectives: Volleyball is an activity that combines competition, entertainment and fitness, and has high exercise value. It is also an effective carrier of moral cultivation. Extracurricular activities with volleyball as the leading project can not only develop students' personality, but also cultivate their strong will and self-restraint ability, teamwork consciousness, collectivism spirit, ability to withstand failure and frustration, and cultivate good psychological and moral qualities such as perseverance, confidence and courage. The objectives of this study include: (1) the current situation of Amateur Volleyball activities in Beijing Sports University; (2) students' hobbies in Amateur Volleyball and their own characteristics (mainly height); (3) investment in the construction of school grounds and facilities; (4) analysis and Research on the environmental atmosphere of school volleyball activities.

Methods: Starting from the development of Amateur Volleyball in Beijing Sports University, this study uses the methods of documentation, questionnaire, mathematical statistics and logical analysis, in order to achieve the expected investigation and analysis results.

Results: In order to train volleyball reserve talents, improve the level of Volleyball in our country, and better communicate, communicate, develop and integrate the volleyball culture of sports colleges and universities with ordinary schools. The development of Amateur Volleyball activities is also related to students' hobbies and their own characteristics (mainly height). As long as the school can create a good atmosphere for students in all aspects, it can cultivate students' interest in volleyball activities, give full play to students' subjective initiative, make them actively participate in volleyball activities, strengthen students' ideological education, cultivate their team spirit, and coordinate their physical and psychological development.

Conclusions: The development of Amateur Volleyball activities in Beijing Sports University is not optimistic. The students' interest and love of volleyball are far less than basketball and football. The poor condition of hardware facilities such as venues and equipment is one of the important factors affecting the development of Amateur Volleyball activities in Beijing Sports University. Some rules on the volleyball court and the school's volleyball environment have affected the development of Amateur Volleyball activities in Beijing Sports University to a certain extent. Insufficient attention from school leaders and insufficient publicity from schools cannot arouse students' interest in volleyball learning.

249 | Risk assessment of tailings reservoir failure: Implications for early warning methods

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Objectives: The consequences of tailings reservoir failure are disastrous; although the safety management of tailings reservoir has been steadily improved, production accidents still occur frequently. In order to improve the safety management level of enterprises, the key risk points are found from the weak links of the system to evaluate and predict the occurrence of potentially hazardous events.

Methods: To ensure the effectiveness of indicators, risk evaluation indexes that affect tailings reservoir failure were initially set up and the static and dynamic states of key evaluation indexes were analyzed based on a Borda count. A consideration of the risk process bias was undertaken, the early-warning grade for the tailings reservoir was predicted using analytic hierarchy process (AHP) and grey relational analysis (GRA) method.

Results: Compared with the traditional AHP methods, it avoids the tedious testability. And this study selected reasonable and effective forecasting indicators applied to tailings reservoir risk assessments.

Conclusions: This work would be of significance in the prevention and reduction of the occurrence of tailings reservoir failure, and would also provide a useful basis for management inspectors at all levels to carry out accurate and realistic monitoring.

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250 | Application of a class of multi-objective particle Swarm optimization in urban rail train operation optimal control

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Objectives: The operation energy consumption of the train occupies a large proportion of the total railway transportation consumption resources. In order to improve the operation energy utilization rate of the train, the relevant experts and scholars at home and abroad have conducted extensive and in-depth research. The train operation process is a multi-objective optimization problem, which needs to meet the requirements of safety, energy saving, punctuality and accurate parking. Current methods can only get one of the solutions in a single operation process, and cannot make full use of all the information which provided in the train operation process. So establishing a multi-objective train operation process optimization model with energy consumption, punctuality and parking accuracy as objectives and safety as constraints.

Methods: Particle swarm optimization (PSO) was used to solve the multi-objective train operation process optimization problem, and the corresponding improved optimization algorithm was proposed. The basic requirement of the decision maker for solution is taken as preference information, which is integrated into the update process of solution to guide the optimization process to move to the desired region. To accelerate its the convergence process, the train operation process is divided into several modes according to the train speed-distance curve. A human-computer interactive particle swarm optimization algorithm is proposed to present the optimized results after a certain number of iterations to the decision maker, the satisfactory results can be obtained after a limited number of adjustments.

Results: The multi-objective particle swarm optimization (MPSO) algorithm is used to optimize the train operation process. The algorithm based on the important relationship between the objectives and the preference information of the given reference points is proposed to improve the existing the algorithm. These methods significantly improve the computational complexity and convergence of the algorithm. An adaptive fuzzy logic system which can simultaneously utilize experience information and field data information is proposed to adjust the results of off-line optimization in real time so as to eliminate the influence of uncertainties on train operation. After optimization and adjustment, the whole running time is increased by 0.5s, energy consumption is reduced by 12%, and the parking accuracy is increased by 8%, and the comprehensive performance is improved.

Conclusions: The computer-aided multi-objective optimization system is realized in this study. It can complete the input of optimization problem, the selection of algorithm, the evaluation of algorithm performance, the preservation and processing of optimization results. It can be used for the optimization of train operation process, the control system and general single-objective and multi-objective optimization problems.

251 | Influence of internet application on the innovation behaviors of farmers' cooperatives

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Objectives: As a new type of agricultural business entity, the farmers' cooperatives have become the backbone of promoting the sustainable development of rural economy. How to effectively drive the innovation of farmers' cooperatives and promote the sustainable development of rural economy has become one of the major issues concerned by the government and academia. Meanwhile, the embedded internet can accelerate the knowledge transformation within the farmer cooperatives, and reduce the coordination costs and transaction costs occurring in the process of cooperation effectively. However, the relationship between internet application and innovative

behaviour of farmers' cooperatives has not been studied from the empirical view. Therefore, based on the survey data of farmers' cooperatives in Sichuan Province, the aim of this study is to explore the relationship between internet applications and farmers' cooperative innovation behaviour.

Methods: This paper adopts fractional logit and control function approach to explore the relationships between internet application and production innovation, technology innovation, management innovation and marketing innovation. In addition, this research analyses the role of managers in internet application and innovation of farmers' cooperative through the moderating effect test. This paper also makes use of the dose-response function to analyse the relationship between the degree of internet application and farmers' cooperative innovative behaviour.

Results: The application of internet has a significant positive impact on the production innovation, technology innovation, management innovation and marketing innovation of farmers' cooperatives. In the robustness test, the analysis results of the control function approach show that the degree of internet usage is not endogenous, and the analysis is robust. Moderating effect analysis proves that, among the farmers' cooperatives that employ managers, the impact of Internet application on innovation is stronger than those which have no manager. The dose-response function analysis shows that there is a significant J-shaped relationship between internet usage and innovative behaviour of farmers' cooperatives.

Conclusions: The role of internet application in the innovative process of farmers' cooperatives should be valued. In addition, the role of managers in the innovation of farmers' cooperatives is also worthy of attention.

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252 | The test and analysis of distribution characteristic of foot pole pressure in children in school age

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Objectives: The aim of this study is to learn the characteristic of foot pole pressure in school-aged kids.

Methods: Flat panel type FOOTSCAN foot pole pressure test system (Belgium) was used to study the characteristic of foot pole pressure in children (n = 40), including boys (n = 20) and girls (n = 20) of school age during natural walking.

Results: There were significant differences in Peak Torque of foot between boys and girls in left foot ($P < 0.05$), including Toe1, Meta1, Meta2, Meta3 and Meta4. In right foot, the disparity appeared in 3 districts ($P < 0.05$), including Meta2, Meta4 and Meta5, and boys were bigger than girls. In comparison of the curve of foot pole pressure-to-time, no matter boys and girls, all the curve was a wave shape with two peaks. Because the weight and the other factors, pressure in each time of boys was bigger than girls. The biggest distinction of impulse was focused on Meta4, Meta3, Heel Medial, Meta2 and Heel Lateral. There was difference in impulse between left and right foot.

Conclusions: There is same tendency in distribution of peak torque in foot pole pressure between boys and girls. And the data of peak torque of boys was bigger than that of girls. The cure of foot pole pressure-to-time was typical wave shape with two peaks and the pressure of boys was bigger than that of girls in each time. There was significant difference in impulse between boys and girls.

253 | Study on urban residents' consumption ability of sports under the view of social stratification

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Objectives: According to the theory of social stratification, this paper discusses the differences and influencing factors of urban residents' sports consumption at the present stage, and then discusses the basic characteristics, changing laws and stratification of sports consumption of urban residents, and promotes the health of sports consumption market. Development, improving the quality of residents' living standards and deepening sports reform have important theoretical and practical significance.

Methods: 1). Observation method;
2). Interview method;
3). Questionnaire survey method;
4). Document Law.

Results: This study, through the survey of urban residents' sports consumption, is divided into four dimensions: age, region, professionalism and education level. The study finds that urban residents of different dimensions exist in sports consumption and physical fitness. Different

characteristics have different influencing factors, but overall, influenced by traditional culture and psychological characteristics, the service level of sports market, the price of sports products, the propaganda channel of informationization and the guidance of the government need to be improved.

Conclusions: 1) Guide residents to make reasonable sports consumption. First, strengthen publicity in the community and guide residents to participate in sports and fitness and sports consumption; Second, conduct targeted sports consumption and fitness lectures. To enhance the self-confidence of residents' sports consumption; third, guide residents to develop a scientific fitness program, rationally plan their personal time.

2) Improve the level of sports consumption services. Enterprises and businesses should conduct comprehensive training and assessment of service personnel who are in contact with urban residents, further improve the level of sports services, establish a good reputation, and attract more urban residents to come to consume.

3) Effectively improve the publicity of sports information. With the increasing popularity of the mass media and the increasing advancement of communication technology, mass media has built a bridge between sports and the public. Therefore, the clever use of advertising propaganda strategy is an effective means to improve residents' sports consumption.

4) Optimize the price system of sports goods. This strategy is based on consumer market segmentation and product positioning, based on income level, age structure, and education level. The basic standard for most urban residents when purchasing sports products is "cheap and good quality", so the pricing strategy should include the establishment of price targets, the selection of pricing techniques and the price tune. First, adopt a low-price strategy for general sports products, adopt a high-price strategy for newly listed sports products, and high-quality service products, and adopt a price adjustment strategy appropriately during the sales process. The second is to set unequal standards according to different regions, environments and different levels of competition services. Third, through the psychological function of sports product prices, urban residents get psychological satisfaction through the price of products.

5) Play government functions. It leads by example and plays a leading role. In the sports market, relevant government departments should conduct in-depth research to understand the urban residents in the sports market. Demand, according to the positioning of the city's sports consumption sports fitness program and integrate relevant information for reference; Draft laws and regulations, regulate industry rules, on the basis of market regulation, government departments should be fully regulated Sexuality and guidance, under the common leadership of the government and the market, truly play the role of market regulation.

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254 | How Wechat marketing affect Chengdu museum spectators' visit intention

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Objectives: With the popularity of mobile internet technology in various industries, it has become a new trend for enterprises to propaganda with social media. Compared with traditional marketing methods. Wechat marketing which is based on the application of Wechat, the largest mobile social media in China, has incomparable advantages. However, the results of Wechat marketing in the actual operation of enterprises have failed to meet people's expectations. Therefore, this paper introduces the technology acceptance model (TAM) into the survey of museum spectators' visit intention to investigate what factors will affect the museum spectators' visit intention in Wechat marketing.

Methods: Based on technology acceptance model, a survey questionnaire with 28 items was developed. All measurement items were adapted from previous studies. Then, 213 valid questionnaires were collected from spectators who presented at Chengdu museum. After reliability and validity test, data were analyzed by stepwise regression to test the hypothesis, such as whether the perceived usefulness and perceived ease of use of Wechat official account have direct and significant effects on spectators' attitude toward Wechat official account and their visit intention, and whether the spectators' attitude toward Wechat official account have a direct effect on their visit intention. Furthermore, this study examines whether the spectators' attitude plays a mediating role when spectators' perceived usefulness and perceived ease of use of Wechat official account as independent variables to predict spectators' visit intention.

Results: The results show that perceived usefulness, perceived ease of use of Wechat official account has direct and significant effects on spectators' attitude toward Wechat official account and their visit intention. And spectators' attitude toward Wechat official account influences spectators' visit intention positively and significantly. Additionally, spectators' attitude mediates the influences spectators' perceived

usefulness and perceived ease of use have on spectators' museum visit intention.

Conclusions: As spectators' perceived usefulness and perceived ease of use positively affect their attitude toward Wechat official account, and both of them have significant positive impacts on the willingness to visit, and spectators' attitude toward Wechat public account play a mediating role between independent variables and dependent variable, operators should pay attention to improving the service quality and the function of operation interface of Wechat official account, so that the audience feel useful and easy to operate, then stimulate users' good attitude, and finally enhance the willingness to visit.

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255 | A Method for selecting initial centers of K-means clustering

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Objectives: The k-means clustering algorithm is simple to implement and has good clustering effect. It has a wide range of applications in data mining. K-means clustering requires the designation of K initial centers, and the initial centers have a great impact on the final clustering result and the running time. The default method for selecting initial cluster centers is to randomly choose K points, that caused unstable clusters and poor effect. Therefore, it is necessary to find a method to select the initial cluster centers.

Method: The Ball-tree structure is an index structure to improve query efficiency. We propose a k-means clustering method based on the ball-tree structure. This not only determines K initial centers in the process of building index structure, but also improves the speed of neighbor query in clustering process. Firstly, the initial centers are selected by using ball-tree structure. In the process of building the ball-tree, the data set is divided into hyper-spheres, and the center, radius and density of each hyper-sphere are calculated. Secondly, the hyper-spheres are sorted in descending order of density and the centers of the first K hyper-spheres are selected as the initial cluster centers. Finally, according to the spherical characteristics of the Ball-tree node, the backtracking query is optimized, the computing overhead in the query process is reduced by calculating the upper bound of vector inner product, and the clustering speed is improved.

Result: The test data are from UCI machine learning repository: Perfume Data Set, Iris Data Set, Forest Fires Data Set. Compared the k-means algorithm with the method for randomly selecting initial centers, the algorithm based on the Ball-tree improves the cluster accuracy by 5.3% on average, but the time cost increases by 19.6% on average. The time complexity of building ball-tree is $O(n(\log n)^2)$, and a lot of time is spent calculating the center and density of the hyper-sphere during the building process. But the time complexity of randomly selecting initial centers is $O(1)$. Due to the extra overhead of building Ball-tree, the clustering speed is slower.

Conclusion: It is efficient to select the initial cluster centers on ball-tree, compared with the method for randomly selecting initial cluster centers, the k-means clustering algorithm implementing on ball-tree can improve the accuracy of clusters, especially applications to incremental clustering.

256 | Research and design of three-dimensional adjustable engine experimental bench

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Objectives: In the engine R & amp; d phase, a large number of operating tests will be carried out to verify performance indicators of the engine. Because of the large types of engines, how to make use of a limited number of bench resources to
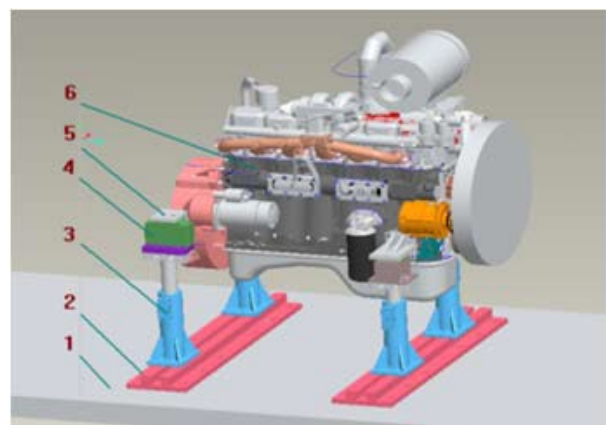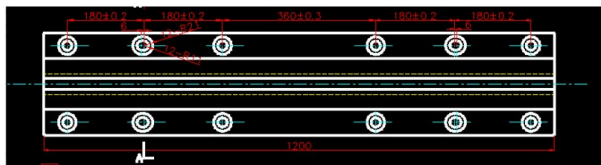

Figure 1. Overall design

Figure 2. Design of bench guide rail

complete an increasingly wide range of test tasks has become a difficult problem in the process of engine testing.

Methods: The creative study of a solution is to design a three-dimensional adjustable engine experimental bench, so that it has the requirements to adapt to a variety of types of engines, in its size and other aspects of scalability, so that it can save a lot of rack resources, to ensure the successful completion of the test task. The specific design is shown in the figure below. (1. Test bench cast iron base plate 2. Bench guide 3. Engine adjustable leg 4. Vehicle soft mount 5. Mount bracket 6. Engine) (As shown in Figure 1), through the adjustment between the guide rail, adjustable bracket and other components, the equipment can be arbitrarily adjustable in three-dimensional space, at the same time, the deviation between the dimensions caused by wear and tear between the parts can be eliminated in time, so that each model can be installed on the rack, to ensure the versatility of the test bench. In the form of the bench, the soft mount component (part 4) of the whole vehicle is introduced, which is of great significance in the test. In the bench form, introduced soft mount vehicle (Part 4), which is of great significance in terms of test. It causes a lot of damage to property, especially in the reliability test process, it is necessary to change the coupling damping rubber ring frequently, which has poor safety performance and low test efficiency.

Results: The suspension cushion used in the whole vehicle is introduced to the test bench. Combining with the mounting dimensions and characteristics of various existing models, and considering the concurrent use (compatibility of 6DE series with DEUTZ) and safety, the corresponding transition connection bracket is designed and manufactured, so that all models can use the soft connection mode in the test, which
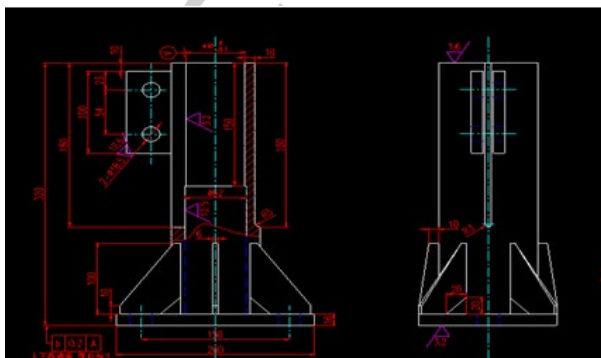

Figure 3. Design of engine universal adjustable leg

greatly reduces the test equipment. The failure rate ensures the smooth running of the test. The cost can be saved about 50,000 to 80,000 yuan by saving only 5 to 8 elastic coupling per year at a unit price of 10,000 yuan.

257 | Chinese abstraction algorithm combining Doc2Vec and TextRank

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Objectives: Automatic abstract can help people quickly understand the content of the article and improve the efficiency of obtaining information. It is of great significance in the field of natural language processing and attracts worldwide attention. Due to the characteristics of Chinese, the automatic abstract is not accurate enough. Therefore, it is of great significance to design an appropriate automatic abstract algorithm in view of Chinese characteristics.

Methods: We propose a Chinese abstract method that combines the Doc2Vec model and the TextRank model. First, the Doc2Vec model is trained by using the document to obtain a sentence vector matrix that can represent information such as context, grammar and context logic. Second, the threshold is defined to remove the too long sentences in the test document that are not suitable as the abstract, and the K-Means algorithm is used to cluster the vector sentences of the tested document, and the number of clusters is equal to the number of abstract sentences. At last, for data points of each cluster, a sentence node graph is constructed by TextRank model. The weight of the edge is the similarity of the sentences, the weight of the node is calculated by iteration, and the sentence with maximum weight in the cluster is extracted as the key sentence. The key sentences extracting from all clusters constitute the abstract.

Results: The abstracts respectively consisting of three sentences, five sentences and seven sentences were tested by the manually annotated data sets. The method proposed in this paper to combine Doc2Vec model and TextRank model showed that the F-measure of the abstracts consisting of three sentences, five sentences and seven sentences was 58.7%, 67.9% and 78.1%, respectively. The data showed that the method Combining Doc2Vec model and TextRank model

works better than the single TextRank model, and the greater number of sentences in the abstract, the better the abstract effect. The experimental results also found that the abstract consisting of the extracted sentences may lose the key information of the text, because the long sentence that is not suitable as the abstract is removed during the process, resulting in information loss.

Conclusions: Compared with the single TextRank model, the method of abstracts by combining Doc2Vec model and TextRank model is effective, but the method of extracting complete sentences to form abstracts will also lead to information loss. Our next research work is to extract keywords and stitch them into sentences to form abstracts, which maybe works better.

258 | Physical characteristics and training of junior football players

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Objectives: Juvenile period is the key period for developing athletes' physical fitness. The level of training at this stage directly affects the development of football in the future. Under this background, it is proposed for juvenile period, it is very necessary to study the physical training strategy of football players from 12 to 18 years old, which has theoretical and practical significance.

Methods: Literature method; Observation; Interview method.

Results: 1) Football sports items and load characteristics
The aerobic energy supply system in football is the foundation and requires high-intensity aerobic energy supply. At the same time, the anaerobic system also needs the aerobic system to recover and replenish. Therefore, football should pay attention to the aerobic ability of the players in peacetime.

2) Physical characteristics of junior football players
The physical and mental development of adolescents has different characteristics at different ages, and their physical and mental development shows certain regularity. The means and methods of exercise training can not only effectively improve their physical fitness, but also positively affect their healthy growth if they are compatible with the physical and mental development of adolescents. Therefore, understanding the characteristics of adolescents' physical and mental development, understanding the laws of adolescents' physical and

mental development, and mastering and controlling these laws as much as possible is the fundamental starting point for formulating training strategies for young football players.

Conclusions: 1) The physical training of juvenile athletes has a special periodicity. Incorporating the physical training of the annual competition stage into the physical training of the talented period, it is necessary to re-divide the training period of many years and years.

2) The training method must conform to the special characteristics. General physical training is the basis of special physical training. Special physical training is the basis for the improvement and improvement of special sports ability. The shortcomings of physical fitness training in China are that there is too much general physical training and too little special physical training. General physical fitness is the basis of special physical fitness. When the general physical fitness reaches a certain level, special physical fitness training is required. We use the squat barbell method to develop the general physical training requirements of the jumping strength, but the special quality requires the speed to take off quickly, and foreign players pay special attention to the training of special speed strength. Therefore, physical training must be combined with special features.

3) Strength training should occupy a larger proportion, and the strength of large and small muscle groups should be coordinated. The average natural growth rate of adolescents before the age of 15 is about 9%, the average annual growth from 15 to 18 years is about 12%, and the muscle strength between the ages of 14 and 17 is the fastest. If you can train scientifically, you can get it quickly. The strength of strength we need.

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259 | Quantitative analysis of win and loss points in Chinese men's beach volleyball competition round

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Objectives: Beach volleyball is an independent sport with its own tactics. This paper describes the whole course of the competition according to the video of 6 matches and 14 games in the 2006 National Men's Beach Volleyball Tour. Knowing the details of the competition makes it more specific to analyze the links that determine the success or failure of modern beach volleyball matches, delimit the rounds of matches and analyze the whole process of matches in more detail. It is found that the rounds with the most wins and

losses in the competition and the key rounds that determine the victory or defeat of the competition provide a reference for the development and training of beach volleyball in China in the future.

Methods: In this paper, video analysis, documentation, questionnaire survey and data statistics are used to analyze the video of 16 games and 14 games of beach volleyball tournament in 2006. This paper takes the cooperation of men's beach volleyball matches as the research object, analyses the situation of gains and losses in each round, and finds out the key rounds that determine the success or failure of the matches. It provides reference for beach volleyball training.

Results: In the statistics of competition, the competition is at least one round and at most eight rounds. The second round scored the most points and the fourth or more rounds scored the least. The first and third rounds play a decisive role in winning or losing the game. The rounds with the most points lost are the first and second rounds, with the winners and losers losing more than 75%, and the rounds with the least points lost are the fourth and higher rounds.

Conclusions: From the results of T-test, there is no significant difference between the winners and losers in various data. The second round scored the most points in the beach competition, and the fourth and above rounds were the least. The rounds with the most points lost are the first and second rounds, with the winners and losers losing more than 75%, and the rounds with the least points lost are the fourth and above rounds. The first and third rounds play a decisive role in the victory and defeat of the game. The difference between the two sides is not very big. But in the first and third rounds, the winning team has 13 points more than the losing team, which is the key to the success of the game. In addition, the frequent service errors and spike errors are also one of the reasons leading to the failure of the game.

260 | Purchase intention of furniture exhibition spectators from the perspective of health

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Objectives: With the awakening of people's health awareness, they pay more attention to their physical health, and improve health-related consumption constantly, especially healthy furniture consumption. The objective of this study is to examine the relationships between health attribute, health cultural identity, individual attitude, mass-following psychology and intention to purchase toward healthy furniture at furniture exhibition.

Methods: Totally 213 valid questionnaires were collected from Chinese spectator who presented at furniture exhibitions in Chengdu city and Chongqing city. Then, the hypotheses were tested by multiple linear regression, such as whether health attribute of furniture and health cultural identity of spectators influence their purchase intention directly, and whether these two variables could be antecedent variables on individual attitude and mass-following psychology toward healthy furniture, and whether individual attitude and mass-following psychology influence their purchase intention toward health furniture.

Results: The results show that furniture exhibition spectators' individual attitude has a positive impact on their health furniture purchase intention, while mass-following psychology does not. Both the furniture health attribute and the health cultural identity of exhibition spectators positively influence individual attitude toward health furniture. And both the health attribute of furniture and health cultural identity of exhibition spectators will have significant positive impacts on the mass-following psychology of furniture exhibition spectators. Additionally, health cultural identity of furniture exhibition spectators and furniture health attribute will positively influence exhibition spectators' purchase intention directly and significantly.

Conclusions: As compared with other elements, mass-following psychology, furniture health attribute and health cultural identity of exhibition spectators, furniture exhibition spectators' individual attitude has the most important influence on purchase intention. Meanwhile, furniture manufacturers should design more distinctive furniture products, catering to the public's purchase demand to promote the development of enterprises. Furtherly, furniture health attribute and health cultural identity of exhibition spectators exert influence on exhibition spectators' health furniture purchase intention directly, which means consumers have preference to furniture made of healthy materials, importance should be attached to the healthy materials.

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261 | Risk reduction and hedging with option implied information

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Objectives: Most researches use only futures prices and spot prices to calculate hedge ratios for futures hedging. Due to the active trading volume of option market, we investigate if the inclusion of option market information can improve the futures hedging effectiveness of futures market.

Methods: Manaster and Rendleman (1982) use the Black and Scholes (1976) model to calculate the theoretical implied volatility and implied underlying prices at the same time. Due to the transaction cost in options market is relatively lower than in the spot market, therefore, options market are more attractive to investors and the options implied information is useful for investors. Since Black-Scholes assumes that the underlying price is logarithmic normal distribution, considering the influence of the third-order dynamic difference and the four-order dynamic difference, Corrado and Su (1996) apply the expansion formula of Gram and Charlier normal density function to adjust the Black and Scholes option model with consideration of skewness and kurtosis. We first obtain implied futures prices and implied volatilities based on Black model and Corrado and Su model. Regression-GARCH, Schwert and Seguin and VECM-BEKK models with implied option information are proposed to calculate hedge ratios and compare their hedging effectiveness.

Results: The empirical results show that the models with implied option information outperform the traditional spot-futures hedge models. To compare the risk reduction of the empirical econometric models, the model with the highest reduction is VECM-BEKK model with the implied options information, followed by GARCH model and the with lowest risk reduction is Seguin and Schwert mode.

Conclusions: The risk reduction reflects the degree of the safe-haven; therefore, we suggest that the investors shall include the option implied information while construct their spot-futures hedge portfolios.

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262 | Analysis on the path to relief negative emotions of college students

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Objectives: To analyze the way of forming and relieving negative emotions of college students in Hubei Province, China, and to explore specific methods of relieving negative emotions.

Methods: Through the questionnaire survey of more than 500 students in Wuhan, Hubei Province, this paper analyzed the causes of negative emotions and the relief methods commonly used by students, and explored the root causes of negative emotions and the specific steps to relieve it.

Results: Negative emotional psychology often consumes people's intelligence, damages people's body and mind, and destroys people's cause. If allowed to breed and spread, it would do more harm. According to the questionnaire survey of college students' negative emotions, negative emotions are widespread: 93% college students think that they have been suffered by negative emotions in varying degrees.

Reasons for college students' negative emotions: 40% college students think that their personality characteristics are the cause of negative emotions. 30% college students think that school environment is the cause of negative emotions. 30% college students think that family, society and other factors are also the causes of negative emotions. 60% students think that the school is an important organization to help college students to resolve their negative emotions. At the same time, the development of personal self-awareness, the help of friends and good social atmosphere are also effective ways to alleviate negative emotions.

The way they used to relief negative emotions: when confronted with negative emotions, 60% students use the transfer method to release it, 12% students use the repression method. Transfer and repression may alleviate negative emotions to varying degrees, but the relief is only temporary especially for the introverted and pessimistic students. In particular, the temporary relief of depression will lead to the accumulation and eruption of bad emotions which would lead to the outbreak of extreme behaviors.

Conclusion: Good personality traits are the most effective way to effectively relieve college students' negative emotions. Through the construction of the guarantee and incentive mechanism of the relevant school system, the motivation and source of college students' study and life can be cultivated through faith construction. The effective way

is extracurricular practice credit system which can urge students to participate in various beneficial activities in their spare time.

263 | A deeper sense of body: Play tennis on the plateau

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Background: Although for most endurance sports had more positive important effects when people enjoyed on appropriately plateau environments, but research on different types of exercise was scarce. Especially, for tennis, a sport with high technical requirements, which is dominated by mixed energy supply, the study on the impact of plateau environment (different with normal plain) and plain environment on human body has hardly been reported.

Methods: We designed an experiment and found the different effects for their body when students played tennis at an altitude of 2000 meters compared with on plain. 15 undergraduates of Chengdu Institute of Physical Education (8 males and 7 females), three weeks of plateau tennis in Chenggong district, Kunming, Yunnan province (1775-2820 m) and two weeks of plain tennis in Chengdu (500 m) were compared between a group of subjects before and after exercise in different locations. Hemoglobin, hematocrit, blood lactic acid, blood sugar, heart rate (all time), respiratory rate, body temperature (HB, HCT, BLA, HR, RR, BT) were measured within 5 minutes before and after one measure unit 60 minutes of Tennis singles. We calculated the difference value and variation coefficient of indexes before and after exercise, used Multi-factor analysis of variance for repeated measurements of body indicators before and after tennis singles exercise.

Results: (1) There were significant differences between men and women in HB plateau and plain ($P < .01$); there were significant differences between women ($P < 0.05$); (2) There were significant differences between men and women in BLA ($P < 0.01$, $P < 0.05$); (3) There were significant differences between men and women in the highest HR ($P < 0.01$, $P < 0.01$).

Conclusion: For body, male had more influence playing tennis on plateau, compared with female. In the plateau area with an altitude of 2000 m, tennis had a more profound impact on college students in the plain, and it mainly changed the ability to carry and use oxygen. Time was more sensitive t factor of heart rate and blood sugar when on plateau.

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264 | Study on factors influencing accidental bodily injury accidents in school physical education

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Objectives: The aim of this study was to try to identify the factors that caused bodily hurt accidents in the college P.E. class.

Methods: Using literature research, logical analysis, questionnaires and other methods of investigation and mathematical statistics, author research the typical court cases of bodily hurt in college P.E. classes and made a series of Physical Education safety rules.

Results: College physical education safety rules, including the safety management of school physical education class, security management and maintenance of sports facilities; Teacher should standardize the teaching process. Teaching should be enhanced set of measures to prevent accidents, guide students obey the security of sports exercise and methods; Students must abide by all rules and regulations in P.E. class.

Conclusions: Research set up a series of physical education teaching safety rules to reduce the accidents of physical education class.

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265 | Research on the economic development mode of sports tourism in characteristic towns

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Objectives: Shuimo ancient town is a national 5A special tourist area. In 2010, UN-Habitat and the Council of the Global Habitat Environment Forum awarded Shuimo, Wenchuan County, the best example of global post-disaster reconstruction. According to its resource advantages, it adheres to the road of integrated development of "tourism +", takes tourism as the overall development, builds Shuimo ancient town into a sports tourism base, explores the development mode of sports characteristic town.

Methods: Research methods for documentation; Data analysis; Investigation visits.

Results: Shuimo ancient town enjoyed the reputation of "Longevity Town" as early as the Shang Dynasty, was called elderly village, and later changed its name to Shuimo. Shuimo has a picturesque scenery, and is full of heath care accommodation. Therefore, it is very important to build the brand of "health and fitness base", conduct experimental analysis on the air quality and water resources of the ancient town, and find the relevant scientific data that is beneficial to health and old-age care.

For the development of outdoor sports corridor from Shuimo to Tai 'an and Jiezi, in addition to the planned 15-kilometer highway from Shuimo to Tai 'an and Jiezi, some people are now specially hiking or orienteering along that path, so that we can broaden and create a sidewalk with humanistic characteristics. If so, there will be an additional pedestrian passage into and out of the back hill of Qingcheng, which will attract some tourists from the Qingcheng to pass through Shuimo ancient town and can greatly increase the number of tourists of Shuimo and Sanjiang.

According to the characteristics of Sanjiang, Shuimo, Tai'an, Jiezi, Yingxiu and Wolong towns, relying on local resources, industry, history, folklore and humanities, highlighting dislocation development and interdependence, it can form a colorful and expectant tourism town circle for health and old-age care.

The track of the 2018 Wenchuan Marathon was along National Highway 213, starting from Yingxiu Town and ending at Aba Teachers University in Shuimo Town. Nearly 6,000 athletes from 14 countries and regions such as the United States participated in it. Chengdu wants to build a city of sports events, and Shuimo Town is located at the junction of plain and plateau, with unique geographical advantages. Thus, sports events can promote the development of sports tourism economy.

Conclusions: 1. The Mode of Tourism + Health Care; 2. The Mode of Tourism + Outdoor Sports; 3. Constructing a Tourism Town Circle; 4. The Mode of Tourism + Sports Events.

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266 | Research on the creative industry development of sports culture in Sichuan Tibetan-Qiang-Yi Corridor

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Objectives: This paper studies the relationship and influence of sports cultural industry in the Tibetan-Qiang-Yi corridor. It focuses on the integration and development of sports industry with tourism, old-age care, education and other industries to promote the development of sports cultural industry in the Tibetan-Qiang-Yi corridor.

Methods: Data analysis; Field visits; Interdisciplinary research.

Results: The Tibetan-Qiang-Yi corridor is rich in natural and human resources. Local regional economic culture, tourism economy, outdoor sports, health care, sports cultural industries blend with each other. Only through integration can development be achieved.

The Tibetan-Qiang-Yi corridor is rich in sports tourism cultural resources. It is necessary to actively expand the development mode of sports tourism cultural resources. This paper discusses four development modes: experiential development

mode; the development mode of events; the development mode of museums; the development mode of sports culture festival.

Competitive performance industry is an industrial chain composed of economic activities with sports events as the leading role and viewing experience as the main form. In the Tibetan-Qiang-Yi corridor, it has created a number of mass events with historical and cultural traditions and regional characteristics, such as creating Marathon and other event brands, and cultivating Chinese bicycle race in Tibetan-Qiang-Yi corridor and other original event brands.

After the earthquake, the facilities in Aba, Ganzi and Liangshan prefectures have also been improved due to the assistance of the counterpart provinces and municipalities, but only in a relatively low-end industrial form. We will leave public sports stadium to the market, free up resources to drive the development of the competitive industry, and build a sports complex with competitions as its core.

The Tibetan-Qiang-Yi corridor is mostly located in the plateau and sub-plateau areas. It devotes itself to the study of plateau-sub-plateau environment, climate, sports and human sciences, training, health care and stadium base construction. To explore its internal laws, we can obtain the research results reflecting the research on the relationship between plateau and sub-plateau environment and training, and the relationship between plateau and sub-plateau environment and health care as well as its influence.

Conclusions: 1. Research on "Sports +" and "+ Sports" as the Development Path of Sports Cultural Industry.
2. Research on Sports Cultural Industry in the Direction of Competitive Performance.
3. Research on Sports Tourism Cultural Industry from the Perspective of Healthy China.
4. Research on the Plateau and Sub-plateau Sports Culture of the Tibetan-Qiang-Yi Corridor.

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267 | An empirical study on the guidance of college students' network thought under the diversified social trend of thought

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Objectives: With the continuous advancement of reform and opening-up and the deepening of globalization, pluralistic social trends of thought pour into colleges and universities, affecting the ideological and behavioral of college students imperceptibly. Under the background of the new era, ideological and political workers in Colleges and universities need to pay attention to the influence of pluralistic social trends of thought on the ideological trend of college students through the network media.

Methods: 18 universities in Ningbo are investigated by means of online questionnaires from July to October in 2018. About 1000 college students were randomly sampled and 998 valid questionnaires were collected, with an effective rate of 99.8%. The method takes the network language expression and thought dynamics as the main research content and interviews ideological and political workers, teachers and young students. Finally, the research data are collated and analysed.

Results: The results indicate that the social trend of thought on the Internet has a negative impact on College students. It is manifested as shaking college students' identification with the mainstream ideology and culture, deviation of democratic consciousness, national consciousness and patriotic consciousness, and growth of utilitarianism, hedonism, consumerism and other thoughts. Under the network environment, the language expression of young college students is more casual, and their ideological and political consciousness is weak. To this end, ideological and political workers should be guided on youth work, be good at using targeted technology to strengthen the cultivation of students' network literacy, strengthen the management and guidance of network opinions, and build a stable and reliable trust, interest selection and verification channels.

Conclusions: Diversified social thoughts have become one of the trends of social development. Individual researchers try to completely "block" the influx of various social trends of thought in Colleges and universities. Such a "strategy" is obviously undesirable, and the effect is not ideal. Guiding college students to correctly identify diversified social trends of thought, using conscious rationality instead of blind conformity to the public's ideological standpoint, using law-abiding morality instead of wayward and disorderly rules of conduct, and participating in network expression with a peaceful and inclusive attitude instead of one-sided and extreme communication will inevitably be the intrinsic driving force for the stable development of schools. Colleges and universities need multi-sectoral overall linkage and

comprehensive measures, through various means to play the role of ideological guidance among college students, to analyze the main social trends of thought affecting college students, to face up to the origin of various social trends of thought in order to cultivate patriotism, inspiration, truth-seeking and action in the new age.

268 | Development of a new type of antenna

Lili Zhao[1]; Pengpeng Yu[1]; Qicai Dong[1]; Chengzhi Zhang[2]; Xiangyang Huang[1]; Zilong Tan[1]; Ruidong Li[1]; Xianglei Meng[1]; Yugang Zhao[1]

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Objectives: With the rapid development of RF and microwave technology, a small wireless communication device has been put forward higher requirements to miniaturization, higher performance, and multifunction over recent decades. To meet the demand of high-quality communication performance, the internal antennas of small wireless communication device must satisfy the requirements as follows: be miniaturized, be the same type with other equipment components, be easy to drive, wide-band or multi-band, high gains and so on. Printed antenna, due to its own advantages, can satisfy the demands mentioned above, and it is widely used in multi-functional, high-performance small communication device nowadays.

Methods: In this thesis, based on the basic theories of Yagi antenna and multi-frequency antenna, a miniaturized triple-band Yagi printed antenna for radar applications in vehicles has been designed and fabricated. On the basic of multiband Yagi antenna above, further study is made on the tunable Yagi antenna, and we have designed a frequency reconfigurable triple-band Yagi antenna through changing the impedance matching network in feed-line.

Results: The designed and fabrication of the multiple-band Yagi antenna based on multi-branch-line structures in this article operates in three different frequency bands, namely 1.9 GHz, 2.5 GHz, 3.5 GHz, and its simulation gains are 5.42dBi, 7.08 dBi, 8.9dBi respectively, and its front-to-back ratios are better than 10.8dB. From measurements, the prototype shows a good agreement between measurements and simulations.

Conclusions: The designed and fabrication of the multiple-band Yagi antenna based on multi-branch-line structures

in this article operates in three different frequency bands, namely 1.9 GHz, 2.5 GHz, 3.5 GHz, and its simulation gains are 5.42dBi, 7.08 dBi, 8.9dBi respectively, and its front-to-back ratios are better than 10.8dB. From measurements, the prototype shows a good agreement between measurements and simulations.

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269 | A study on the estimation method of UWB channel

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Objectives: Ultra-wideband (UWB) technology is an emerging short-range wireless communication technology. It uses a narrow pulse of nanoseconds to picoseconds to transmit data with high bandwidth in the frequency domain for high-speed data transmission. UWB system also has low power consumption, low power spectral density, strong anti-multipath interference capability, and coexistence with existing wireless communication systems in the same frequency band. Therefore, it has received extensive attention in today's increasingly tight spectrum resources. Utilizing the sparseness of the UWB channel, the compressed sensing method can effectively reduce the sampling rate of the UWB communication system. Two methods have been proposed in the previous literature. One is the channel estimation method based on the compressed sensing theory, which obtains a good bit error rate performance at a lower sampling rate. One is the filter matrix estimation algorithm, which can achieve better bit error rate performance at lower sampling rates.

Methods: This paper discusses the channel estimation problem of UWB systems by using the compressed sensing method in the frequency domain. By analyzing the sparsity characteristics and channel structure characteristics of the UWB channel, the mathematical model based on the compressed sensing is established by using the data of the transmitting end, the frequency domain relationship between the receiving end data and the channel, and the appropriate number of observations are selected, and the orthogonal matching tracking algorithm is used to sparse The channel is reconstructed. The results show that the proposed performance is better than the traditional frequency domain least squares (LS) algorithm in the same signal-to-noise ratio.

Results: This paper uses Matlab's simulink module for simulation calculation. The simulation results show that the MSE of the OMP algorithm is smaller than the MSE

of the LS algorithm when the signal-to-noise ratio changes gradually from 0 to 6. This indicates that the OMP can reconstruct the original channel better and the reconstruction accuracy is improved by 1 dB. In the case of the same signal-to-noise ratio, the system error rate when using the OMP algorithm is lower than that of the LS algorithm, and the reconstruction effect of the OMP algorithm is better than that of the LS algorithm.

Conclusions: In this paper, the UWB channel is estimated and equalized by the compressed sensing method in the frequency domain. The method uses the training sequence in the frequency domain to form an observation matrix and reconstructs it with the OMP algorithm. The compressed sensing method can be used in the time domain and the frequency domain respectively. The time domain compressed sensing method has complex process complexity and the reconstruction precision is slightly higher. Because the frequency domain compressed sensing method is simple and the reconstruction accuracy is slightly poor, the reader can choose the appropriate compression sensing method.

270 | Design of control system for head-mounted optical pump magnetometer

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Objectives: Magnetoencephalograms can see electrical activity in the brain. The devices that perform this function are called superconducting quantum interference devices. But these devices are huge and heavy, which makes it impossible to use magnetoencephalograms to study moving people. In this paper, a portable and comfortable head-mounted optical pump magnetometer control system is designed. The helmet is printed in 3-D to ensure direct contact between the sensor and the scalp surface of each tester. In this prototype design, the sensor only covers the right sensory cortex. After wearing the helmet, the subjects can still move their heads freely.

Methods: A mathematical model for control system is established and a digital controller based on FPGA is designed to improve the tracking performance of optical pump magnetometer. PID controller is selected after analyzing the feature of fundamental wave. The parameters of digital controller are optimized by using discrete tuning rules. The stability of control system has been proved according to the roots loci of closed-loop system after being tuned. The theoretical values of dynamic performance are obtained by the simulation of step response.

Results: The result in steady-state measurement shows that the digital controller can lock the magnetic field on the set value. The fluctuation is less than 1nT and the minimum

locking accuracy reaches 0.95 Hz. The result in dynamic-state measurement shows that the instrument is able to achieve the tracking for changed magnetic field rapidly. The settling time of locking process is five seconds, the overshoot is from 10% to 15% and the rise time is 1 second. These results are identical with the simulation, which demonstrates that the mathematical model of control system can reflect the behavior of instrument and provide theoretical basis for the design of control system and every module. The stability analysis shows the dynamic performance of the optical pump magnetometer.

Conclusions: The design of digital controller greatly improves the dynamic performance of optical pump magnetometer, enhance the adaptive capacity of instrument to changed magnetic field. The parameters of optical pump magnetometer can be selected based on different occasions in practical application and the requirements to performance index, and then, the measurement will get the optimal results.

271 | Research on the relationship between board characteristics and technological innovation based on the heterogeneity of the ultimate control of property rights of agricultural enterprises

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Objectives: This paper takes the 2013-2017 China agriculture-listed enterprises as a sample, uses the non-balanced panel data to construct the regression analysis measurement model, and sets the board characteristics, the independent directors, the independence of the board of directors, the two roles and the executive incentives, etc.

Methods: Study the characteristics of different board characteristics generated by the ultimate control of the heterogeneity of property rights and the impact on the technological innovation activities of agribusiness.

Results: Through research, it is found that the scale of board of directors involved in agricultural enterprises is positively related to technological innovation activities; the scale of independent directors and the independence of board of directors and the relationship of technological innovation are positively related, and non-state-owned enterprises are more prominent than state-owned enterprises; the relationship between two positions and technological innovation is involved. The overall and non-state-owned enterprises of agricultural enterprises are positively related to each other. The state-owned enterprises are negatively correlated. Under the incentives of senior management, state-owned enterprises can significantly promote technological innovation activities of enterprises. The two are positively related.

Conclusions: This paper believes that the government should increase the support and policy inclination of non-state-owned enterprises involved in agriculture, encourage them to carry out technological innovation and promote development; carry out the reform and development of state-owned enterprises in mixed ownership enterprises; improve laws and supervision measures, and increase the ultimate control of listed enterprises in agriculture Human supervision; establish and improve the party organization in the enterprise, strengthen party leadership to improve the efficiency of the board of directors, and create a favorable atmosphere for the smooth development of the technological innovation activities of the agriculture-related enterprises.

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272 | The effect of information disclosure quality of listed companies on equity financing costs: Evidence from China

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Objectives: The aim of the paper is to explore the effect of the quality of information disclosure on the cost of equity financing. Whether the company can save financing costs through high-quality information disclosure is a key concern of the management, government and financial regulatory agencies, and scholars. Therefore, it is crucial to study the effect of the company's information disclosure quality on the cost of equity financing. Finally, we further explored the effect of information disclosure quality on the cost of equity financing under the different conditions of corporate profit and loss, and then provided theoretical advice for enterprises to reduce financing costs and actively improve the quality of information disclosure.

Methods: We used the profit abnormal growth model (PEG model) to estimate the equity financing cost, which is calculated as: $PEG = (EPS_2-EPS_1)/P_0)^{1/2}$, where EPS_1 represents the predicted earnings per share when $T = 1$, EPS_2 indicates the predicted earnings per share at $T = 2$, and P_0 represents the stock price at $T = 0$. In addition, information related to information disclosure is collected through the Flush database. Firstly, through descriptive statistical analysis, the correlation analysis of each variable makes a preliminary judgment on the relationship between equity financing cost and information disclosure quality, and then uses the least squares method for regression analysis, using SPSS software to calculate, and conducting T test and F test.

Results: The empirical results of the effect of information disclosure quality on equity financing costs show that the coefficient of information disclosure (IDRI) is −0.0012, which is significantly negatively correlated with the cost of equity financing (PEG) at 10%. It shows that the improvement of the quality of information disclosure of listed companies can significantly reduce the cost of equity financing. Further, under the two different states of corporate profit and loss, the research results of the effect of information disclosure quality on equity financing costs imply that the coefficient of information disclosure quality (IDRI) of profitable enterprises is −0.0013, and the coefficient of information disclosure quality (IDRI) of loss-making enterprises is −0.0008, which is significantly negatively correlated with the equity financing cost (PEG) at the level of 5% and 10%, respectively. It shows that regardless of corporate profit or loss, improving the quality of information disclosure can significantly reduce the cost of equity financing.

Conclusions: The results imply that improving the quality of information disclosure can significantly reduce the cost of equity financing. On the one hand, company managers should actively improve the quality of information disclosure and improve the internal management system. On the other hand, regulators need to strengthen external supervision, and understand market changes in real time, and develop a regulatory system in a timely manner.

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273 | Research on the impact of dual strategic orientation on entrepreneurship performance from the perspective of network embeddedness

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Objectives: Network embeddedness is of great significance to improve the performance level of strategic orientation of enterprises. A large number of empirical studies show that entrepreneurial orientation and market orientation have a positive impact on corporate performance respectively. Little is known about how they act in combination to influence performance from the perspective of network embeddedness.

Methods: In this study, the network embeddedness, including structural embeddedness and relational embeddedness, was taken as mediator variable, and the entrepreneurial orientation

and market orientation were taken as two strategic orientations to be included in the study of the influencing mechanism on entrepreneurship performance to form the research framework of "dual strategic orientation - network embeddedness - entrepreneurship performance", thus discussing how dual strategic orientation influences entrepreneurship performance through network embeddedness. Taking the small and medium-sized start-up technology enterprises in China as the research object, 460 valid samples were collected and modeled and analyzed using the Partial Least Squares-Structural Equation Modeling (PLS-SEM). The twelve hypotheses proposed in this study have all passed the verification of statistical significance.

Results: Through this study, it was found that a higher level of entrepreneurial orientation combined with market orientation could better promote entrepreneurship performance and the influence of market orientation on entrepreneurship performance was stronger. The network embeddedness had a mediating effect between dual strategic orientation and entrepreneurship performance and the influence of relational embeddedness was greater than that of structural embeddedness, and the influence of market orientation on network embeddedness was also much higher than that of entrepreneurial orientation.

Conclusions: This study continues to advance the previous research results, which can better understand how the network embeddedness of start-ups in developing economies promotes strategic orientation to promote corporate performance. The discovery of these theories also provides the corresponding basis and solutions for guiding practice.

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274 | Evolution of the judges' accountability system in China in the context of misjudged criminal cases

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Background: The establishment and improvement of the judges' accountability system is related to the smooth operation of judicial reform and the construction of rule of law in China. Fairness and justice is the eternal pursuit of the society ruled by law. Accordingly, to investigate the judges' accountability for wrong verdicts is not only the requirement of victims, but also an inherent need of developing the judges' team, deterring judicial corruption and carrying out the judicial reform.

However, a series of problems occurred due to the defects in theory and misunderstandings in practice after implementation of the judges' accountability system, which has even hindered correction of the misjudged criminal cases to some extent. Therefore, it is necessary to revisit this accountability system and find out solutions on how to improve such system.

Method: This paper makes an overall study of the system of investigating judges' responsibility in China through comparative analysis and empirical research. The judicial reform of the "court-centred mode" gives judges more powers and functions in China and imposes them more responsibilities within an integrated framework of powers and responsibilities which should be supervised in an adequate manner.

Results: It is a feasible direction for the reform of the judges' accountability system to establish the model of investigating judges' liability for professional ethics gradually. Therefore, the key point of establishing the model of investigating judges' liability for professional ethics is to improve the procedure of investigating judges' liability and follow the judicialization mode to develop the procedures of investigating, charging and hearing the judges' misconduct based on the characteristics of judges' careers.

Conclusions: On the basis of improving the system of investigating judges' liability for misjudged cases, it is necessary to establish a proper system of investigating judges' liability for professional ethics in accordance with the national situation of China so as to constitute a complete judges' accountability system.

275 | Network intrusion detection of abnormal packet based on sequential feature multi-model weight extraction

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Objectives: With the rapid development of network technology, computer network has been widely used in various fields of human activities. The impact of network on social economy and people's lives is growing, and the problem of network security is also receiving more and more attention. Facing the severe situation of network security, there is an urgent need for effective network security technology. Intrusion detection

technology is an important network security technology. At present, intrusion detection system has many problems, such as high alarm rate, poor attack ability, low detection ability to exquisite and mutation attacks. According to the above problems, this paper proposes a new network intrusion detection system based on data mining to improve the comprehensive performance of intrusion detection system.

Methods: Based on the analysis of network intrusion detection technology, this paper focuses on the anomaly detection algorithm of network data flow. Network data flow belongs to the typical data flow type. From the point of view of data flow analysis, anomaly detection can be seen as how to discover anomaly data flow, which can be regarded as outlier analysis in the field of data mining. The problem of data stream mining and analysis is a very challenging new topic in the field of data mining. Because the data stream has the characteristics of massive and dynamic changes, the traditional data mining algorithm is not very effective in data stream analysis.

Results: In order to further improve the detection rate of the system, the adaptive sliding detection window algorithm is used in the detection model, FCM clustering algorithm and conditional entropy are used in the establishment of the sliding detection window algorithm. The algorithm can automatically determine whether the length of the sliding detection window needs to be adjusted according to the status sequence of the current network packet flags. The implementation of the detection algorithm makes it possible for the sliding detection window to be adjusted. Network attack detection can always detect the status sequence of network packet flags with appropriate sliding window size, which improves the real-time and effectiveness of the detection model.

Conclusions: High-order stochastic process can better describe the process of system call, because the process of an intruder's invasion cannot be completed by several system calls independently of the system. For first-order stochastic processes, the current state is related to only the previous state, but not to other states. To a certain extent, it loses some important state information. Combining the three data mining algorithms has higher detection efficiency and lower false alarm rate than using clustering algorithm alone.

276 | Network attack detection method based on multi-layer condensation of characteristic general differential evolution

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Objectives: Situational awareness system, monitoring and control system, information hub center and various force units in cyberspace information confrontation are composed of highly connected complex networks. In information confrontation, the first attack on the other side's network system can directly destroy or disintegrate the other side's information defense system. With the continuous development of information technology, the application of complex networks in military and economic fields More and more widely, the organizational structure of network application is more cooperative, the application level is developing in many directions, the network attack behavior is more uncertain, and the attack strategy is becoming more complex and diversified.

Methods: Since there are no more than dozens of measures to measure the importance of network nodes, covering many aspects such as topological structure, dynamic process and so on, it is necessary to establish a reasonable and complete evaluation index system for evaluating the attack effect of nodes in complex networks. According to the general principle of constructing index system, various influencing factors are comprehensively considered and analyzed from the local and global attributes of networks. Three aspects of cascade failure are considered to construct an evaluation index system. Through a series of key metrics reflecting the structural information of network system, the attributes of topology structure are analyzed, and the changes of structural attributes of evolutionary network are quantified. It is shown that the connection relationship of nodes changes during the dynamic evolution of network when attacking complex network system, so as to judge the impairment of network function after attack. In addition, a comprehensive evaluation conclusion of attack effect is drawn, which provides a targeted strategy for subsequent selective attacks.

Results: When formulating attack strategy, the structure, defense deployment and important nodes of the attacked network are unknown and uncontrollable. The index data used to evaluate the attack effect is often not comprehensive. The target network is evaluated by static means, which is passive and often lags behind the expected effect. This paper uses dynamic Bayesian network method to attack the network. A comprehensive analysis of the impact factors is made, an evaluation index system is established, and the dynamic Bayesian network method is used to evaluate the network attack effect.

Conclusions: Whether the advantages of this method can be applied to other network attacks with more complex structures and highly intelligent defense strategies needs further study. In addition, it can be observed in experiments that the attack cost of strategies with good attack effect is sometimes very huge, and the ratio of attack gain to cost loss needs to be improved to be stable and controllable. Finally, complex networks need to be further studied. When some nodes of the system are attacked, their failure may be temporary. When they have the ability of self-recovery, the self-recovery of nodes should be considered.

277 | Research on localization algorithms for wireless sensor networks

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Objectives: In order to improve the accuracy of sensor information acquisition more effectively, localization algorithm must be used to achieve accurate positioning. However, as far as the current technical means are concerned, there are still large errors in the positioning calculation in some specific areas, which cannot achieve accurate positioning. Moreover, the possible connections between nodes will be neglected in the calculation, which further affects the accuracy of calculation. So the performance of localization algorithm needs to be improved to ensure accurate positioning.

Methods: Delaunay Complexes belongs to triangulation expansion algorithm. Delaunay Complexes can systematically plan the whole network. If the network is completely rigid, it can identify the network boundary and network axis, then select the appropriate landmark node, create the corresponding Delaunay Complexes, and finally fully consider the location of the node to complete the node positioning.

Results: For test nodes, location technology plays a key role. By using location technology, technicians can quickly find geographic location information. Without accurate location information, data monitoring cannot be carried out orderly, specific physical events cannot be reasonably explained, and its role in usability is not obvious. On the other hand, location technology can also be used to assist the router in combination with other modules, so that the routing table does not need to take node storage and maintenance and the router is in stateless routing. Because the node can't locate its position accurately, technicians can get the exact location of the node by deploying sensors, and calculate the location of the node according to the established algorithm.

Conclusions: Location technology plays a very important role in wireless sensor networks. Because the actual application scenarios are not used, we should fully consider the factors that can affect the final measurement results by the location algorithm, and consider the rigidity theory of the location algorithm in an all-round way. Localization algorithm still has a lot of room for development. It is expected that the comprehensive improvement of localization algorithm can inspire the development of wireless sensor networks.

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278 | Circuit design of adaptive electronic speed regulation system for gasoline engine

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Objectives: At present, small gasoline engine generating units still adopt mechanical governor, which has many shortcomings, such as inertia lag and large friction resistance. There will inevitably be some shortcomings in speed regulation, and it does not meet the requirements of the generator for the speed stability of gasoline engine. Therefore, it is necessary to develop an electronic governor with low price, high stability, good performance and wide application range. This can solve the shortcomings of mechanical governor in regulating units and enhance the automation level, speed stability and generator quality of gasoline generating units.

Methods: Electronic governor mainly adopts Hall current sensor to complete the effective detection of the specific load current and accurately measure the actual power of the load. Diode can be used to rectify the rectifier task, and polar capacitor can be used to realize waveform conversion. Finally, voltage divider resistance is selected to divide the voltage, and then, it is input to the AN1 pin in the single-chip computer. With the help of A/D module in the single-chip computer, the effective detection of AC voltage can be completed. This system uses LM358 operating and discharging voltage comparator, which makes the application range of power supply voltage wider and realizes the simultaneous operation of dual power supply. In the process of gasoline speed detection, Hall speed sensor and other traditional forms are not selected for the detection of the adaptive electronic governor. The selection is to excavate the relationship between rotational speed, frequency and periodicity in depth, and then, the periodicity can be detected directly. Diode rectifier circuit and voltage comparison circuit are selected for periodic detection, and the original sinusoidal waveform can be converted into square wave which can be effectively recognized and captured by single chip computer. Thus, the cycle can be calculated directly and the speed of gasoline engine can be indirectly detected. Through the design of the hardware circuit with PIC16FB77A as the core chip, the design of the detection circuit is completed.

Results: The advantage of electronic speed regulation is very obvious. It can improve the automatic control accuracy and response speed of internal combustion engine to the greatest extent. It has become one of the widely used technologies in some developed countries. At the same time, the development of digital multi-functional speed governor has become the direction of future scientific and technological development.

Conclusions: The hardware circuit of the adaptive electronic governor is the important carrier of the software system for gasoline generator, so the hardware circuit is directly related to the effectiveness of the governor. So it is necessary to design scientific hardware circuit in order to realize the effective control of governor.

279 | A HEVC video coding method based on deep learning

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Objectives: With the continuous improvement of broadcasting signal resolution and video experience requirements, advanced video coding standard H.264/AVC has shown its shortcomings in the application of high-resolution video compression. In order to further improve the coding efficiency, high-performance video coding technology needs to be solved urgently.

Methods: According to the coding effect of different HEVC video sequences, different kinds of HEVC video sequence samples are selected. Firstly, the improved deep learning algorithm of intracoding is used as a method to deal with HEVC video coding. On the basis of in-depth analysis of the characteristics of different HEVC video sequences, block complexity is used as the input of K-means algorithm, and current blocks are partitioned by intraprediction. The traditional local search algorithm is replaced by the improved fast intracoding depth algorithm. Then, the precise prediction of SVM algorithm on multi-dimensional data is used to realize coding partition prediction, which can reduce the complexity of coding process and the impact of error classification. The essence of machine learning is spatial search and generalization of functions. The main step is to extract features from data as input, abstract and construct a certain data model to obtain information in data, and use the model to analyze and predict unknown data. Then, according to the predicted results, the appropriate machine learning model is selected continuously until the generalization ability satisfied with the unknown data can be obtained.

Results: The new method effectively utilizes the relationship between parameters in the whole coding process. K-means algorithm has outstanding learning and prediction ability. It can effectively improve the coding efficiency while guaranteeing the quality of video coding. It shows the outstanding performance of this method. SVM inter-frame coding depth algorithm makes full use of various coding parameters in the coding process, which can effectively represent important information, and reduce the computational complexity in the coding process. This method can achieve the same coding quality as standard coder.

Conclusions: The improvement of intra-frame coding depth algorithm and inter-frame coding depth algorithm achieves the purpose of reducing the complexity of HEVC coding. This method can analyze the coding data generated in the coding process, simplify the coding flow chart reasonably and avoid the process of searching coding depth exhaustively. It is an innovation of improving the coding depth algorithm.

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280 | Research on biorthogonal characteristics of multivariate vector valued wavelet packets with dilation matrix

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Objectives: The vast majority of information in the real world is multidimensional information. Multivariate wavelet theory is one of the common tools to study multidimensional information. It is necessary to study multivariate non-separable wavelet and wavelet packet. Vector-valued wavelet is a kind of generalized multiwavelet, which belongs to the category of multiwavelet theory. It not only has the good characteristics of single wavelet, but also overcomes the shortcomings of single wavelet. The vector-valued wavelet can not only remove the correlation of vector-valued signals in time domain, but also remove the correlation of vector components at a certain time. Therefore, it is necessary and meaningful to study multivariate vector-valued wavelets.

Methods: The definition and construction of multivariate nonseparable biorthogonal wavelet packet, the concept and existence of multivariate vector-valued wavelet, and the existence and construction of vector-valued biorthogonal wavelet are the basis of this paper. This paper elaborates some biorthogonal characteristics of multivariate vector-valued wavelet packets with dilation matrix. Firstly, the compactly supported multivariate vector-valued function is given, and the multivariate vector-valued biorthogonal wavelet function is obtained corresponding to the multivariate vector-valued biorthogonal scaling function. The multivariate vector-valued wavelet packet of multivariate vector-valued biorthogonal

scaling function is Fourier transformed. Then, the definition of multivariate vector-valued biorthogonal wavelet packet is given, and the properties of multivariate vector-valued biorthogonal wavelet packet are discussed.

Results: Vector-valued wavelet is superior to multi-wavelet. It can not only embody the characteristics of localized signal in time and frequency domain, but also solve the shortcomings of single wavelet, that is, compact support, orthogonality and symmetry. Multiwavelet needs pre-filtering to process the initial sampling signal, while quantum wavelet can directly process the sampling signal, which can greatly improve the efficiency.

Conclusions: Finally, the biorthogonal formulas of multivariate multivector-valued biorthogonal wavelet packets are obtained. In addition, in order to obtain a clearer spectrum of a certain area, the wavelet packet transform has a clearer grasp of the information of the target area than the wavelet transform.

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281 | Message transmission time study based on improved XOR bit-filling method in CAN bus

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Objectives: Message transmission time in CAN bus is closely related to the message length which directly affects the transmission reliability in bus system. Due to CAN bus filling mechanism, the filling bits of the message varies with the message bytes and content, and the message transmission time is a random variable. On the basis of reducing filling bits (reducing the message transmission time), the statistical index of calculating the message transmission time is of great significance to research and improve the bus system performance.

Methods: The filling mechanism of CAN bus was analyzed. XOR filling method was adopted and necessary amendments were made to reduce filling bits reasonably. The probability distribution curves of message filling bits based on improved XOR filling method can be obtained by modeling and programming simulation. Based on the simulation probability distribution curves and related statistical formulas, the statistical characteristics of message transmission time based on improved XOR filling method were obtained.

Results: Combining the message bit-filling probability distribution maps obtained by modeling simulation and

formula derivation, we obtained the statistical characteristics of standard frame transmission time based on the improved XOR method varying with the number of message bytes. Represented by Z (μ_Z, σ_Z^2, θ_Z, η_Z) (Z: number of bytes; μ_Z: mean of message transmission time, unit: μs; σ_Z^2: variance of message transmission time, unit: μs^2, θ_Z: third-moment of message transmission time, unit: μs^3, η_Z: fourth-moment of message transmission time, unit: μs^4. The baud rate is 500 Kbps here) as follows: 0(95.5000, 2.4748, 3.2440, 19.6208); 1(112.1422, 3.5832, 4.8696, 41.7568); 2(128.9734, 4.9280, 6.4648, 76.2064); 3(145.1018, 5.1752, 7.1840, 85.6112); 4(161.6500, 6.1544, 8.6904, 124.9536); 5(179.1274, 7.6612, 9.1416, 183.2544); 6(194.8576, 8.0148, 9.7168, 188.2304); 7(211.2578, 8.6712, 12.4128, 240.0592); 8(227.7620, 9.3528, 11.4560, 262.112).

Conclusions: The performance analysis of CAN bus using the traditional worst-case method is conservative and cannot reflect the random characteristics of transmission time in CAN bus. In this paper, we started from the inherent bit-filling mechanism in CAN bus. Then, we analyzed the XOR filling method and made necessary corrections. The probability distribution maps of the filling bits were obtained by modeling and simulation. The statistical characteristics of message transmission time based on improved XOR filling method were deduced by using simulation probability distribution curves and related formulas, which will provide a theoretical basis for further research on random characteristics of transmission message in CAN bus system.

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282 | An experiment for functional movement screening test based on SPSS

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Objectives: The FMS test is used to confirm various modes of compensatory movement of athletes in the power chain. The directions, clear understanding and priorities are pointed out for various restrictions on movement, unsymmetrical movements, and causes and severity of pain movements.

Methods: By sorting the test data and using the features of the performance function in SPSS, the t test is carried out for the sample mean value and P value to analyze the reliability of the experiment. Functional movement screen (FMS) is a prediction system, which is a reliable seven-step observation system. By evaluating, analyzing and confirming athletes'

movement mode and movement quality, we can find out their defects and imperfections in basic stability, flexibility and athlete's whole-body movement mode, so that the athlete's specific basic technical movements are based on a correct and efficient movement mode and movement quality, thereby reducing the injury and improving the efficiency of movement. Using the test of the 7 movement modes of FMS, the weak link in which athletes had low scores and were vulnerable to physical injury was screened.

Results: Before the experiment, from the test data and the results of analysis, most of the basketball players have obvious asymmetry on both sides of the body. The result of the hurdle step score is 1.70 ± 0.438. The maximum value is 3 and the minimum value is 1. There is obvious physical asymmetry. The result of the in-line lunge score is 2.20 ± 0.422. The maximum value is 3 and the minimum value is 2. There is physical asymmetry. The result of the shoulder mobility score is 2.30 ± 0.483. The maximum value is 3 and the minimum value is 2. There is physical asymmetry. The result of the active straight leg raising score is 2.70 ± 0.483. The maximum value is 3 and the minimum value is 2. This shows the unbalance of flexibility on both sides of the lower extremities. The score of the rotary stability movement mode is 1.40 ± 0.516. The maximum value is 2 and the minimum value is 1. The 3-point movement of the mode cannot be completed among the tested basketball players, and the asymmetry on both sides of the body simultaneously exist.

Conclusions: The flexibility and stability of some parts of the body of young basketball players are poor, there is a general asymmetry in both sides of the body, and FMS scores have significant differences. It shows that the development of basketball players' muscles on both side of the body is unbalanced, which reflects the asymmetric development of the basic movement ability on both sides of the body, and there are functional limitations on the weak side of the body. Therefore, the coach needs to strengthen the training for the disadvantaged side of the athlete's body in the future.

283 | Venture capital, R&D investment and enterprise innovation: Evidence from China's information technology industry

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Objectives: The purpose of this paper is to explore the relationship between venture capital, research and development inputs (R&D) and corporate innovation in listed high-tech companies. Enterprise technology innovation capability is becoming more and more important in the process of enterprise development, and increasing R&D investment is one of the important ways for enterprises to improve their innovation ability. Venture capital is more favored by high-tech enterprises, which has an important influence on the development of high-tech enterprises with greater innovation. Therefore, by studying the contribution of venture capital and R&D investment to the technological innovation of high-tech enterprises, it can provide some reference for enterprises to make strategic decisions, especially for enterprise venture capital and R&D investment decision-making.

Methods: Based on the data of high-tech enterprises listed on the GEM of the Shenzhen Stock Exchange in 2009-2016, this paper explores the impact of corporate venture capital and R&D investment on corporate innovation. We have established a multivariate regression model to study the impact of venture capital, R&D investment, and the intersection of venture capital and R&D investment on firm innovation. Through multiple linear regression, the effects of factors other than venture capital and R&D investment on enterprise innovation are comprehensively examined, and the reference value of regression results is guaranteed. And through the replacement of the measurement variables of enterprise innovation, a robust test was carried out, which further verified the feasibility of the results.

Results: The regression results show that in the multiple regression model of venture capital and enterprise innovation, venture capital and enterprise innovation are significant at the level of 1%, with a coefficient of 2.586, indicating that the participation of venture capital can promote enterprise innovation; in R&D investment and enterprise innovation In the multiple regression model, R&D investment and enterprise innovation are significant at the level of 1%, with a coefficient of 0.532, indicating that there is a positive correlation between R&D investment and corporate innovation. And the intersection of venture capital and R&D investment is at 1% level. Enterprise innovation is positively related, further illustrating the role of venture capital and R&D investment in promoting corporate innovation.

Conclusions: The research results show that not only the participation of venture capital can promote the innovation of listed high-tech enterprises, but also the R&D investment has a significant positive impact on enterprise innovation. The higher the R&D investment, the higher the innovation promotion of listed high-tech enterprises. In addition, the company's resource accumulation and government policies can also have an impact on the company's ability to innovate. Therefore, high-tech enterprises can introduce venture capital, government policies to guide venture capital, and venture capital should invest in high-tech enterprises to achieve multi-win.

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284 | Design of visual 3D scene based on virtual reality technology

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Objectives: The object model in the virtual reality scene is actually a new way to reconstruct the virtual display environment of the objects produced by the real world or human imagination. The model built in the virtual environment is the basis of constructing the virtual reality scene and plays an important role in the reconstruction system of the virtual environment. Especially the quality of the three-dimensional model will be directly reflected. Because of the reality of virtual reality scene, excellent virtual reality modeling technology is very important for the construction of virtual reality scene.

Methods: The modeling method based on image sequence used in the system in this paper is actually to reconstruct the two-dimensional image sequence of buildings. The specific construction process is realized by four steps: camera calibration, feature point extraction, three-dimensional data calculation and three-dimensional model reconstruction. Based on the three-dimensional coordinate reconstruction algorithm and camera calibration theory, the three-dimensional model reconstruction technology of two-dimensional image is effectively transformed into a set of software tools, which improves the automation requirement of three-dimensional model reconstruction process in virtual reality technology to a certain extent.

Results: Modeling technology in virtual environment can construct a real-time and high-fidelity virtual reality scene system, and ultimately meet the requirements of virtual reality modeling, which makes it convenient for ordinary users who are not familiar with three-dimensional modeling technology to reconstruct the three-dimensional model of two-dimensional images. The proposed method has played a positive role in the promotion of virtual reality technology itself and greatly accelerates the modeling speed of three-dimensional virtual buildings.

Conclusions: Using the technology of building three-dimensional model based on two-dimensional image sequence is the main method of building three-dimensional virtual reality scene model. However, the use of this technology will be limited to the development of commercial software functions. The three-dimensional model building technology introduced in this paper is different from the traditional commercial software. It uses some scientific theoretical algorithms to reconstruct the three-dimensional model through mathematical calculation. The model constructed by this method is more authentic and scientific than this commercial modeling software.

285 | Research on the spatial distribution of exhibition venues in China based on GIS

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Objectives: The spatial distribution characteristics of exhibition venues can decide the overall planning of the investment, construction and operation management of exhibition venues in various regions. The excellent spatial distribution occupies a place in how to maximize the related effects of the MICE industry. In this paper, we use the quantitative method to analyze the spatial distribution characteristics of 559 professional exhibition venues that are distributed in 334 prefecture-level regions in China. We explore the influencing factors of the formation of the spatial distribution characteristics in depth.

Methods: The dataset in this paper is from 14 professional exhibition websites and the "China Exhibition Data Statistics Report". We use the Nearest Neighbor Index to identify the types of exhibition venues' spatial distribution in China. We use the Average Nearest Neighbor tool in the Spatial Statistics Tools of ArcGIS10.5 software for analysis. The spatial distribution of Chinese exhibition venues can be measured by the degree of its concentration, the degree of its balance, and the regional distribution differences. We use the Geographical Concentration Index, Unbalance Index and the Spatial Gini Coefficient to analyze these measurements. In addition, we utilize the Kernel Density Tool to estimate the nuclear density of the information of exhibition venues in 31 province-level regions in order to obtain the spatial density.

Results: Firstly, the structural analysis shows that the nearest neighbor index R = 0.462475 which is seen as a typical condensation distribution. Secondly, in the perspective of the province level, geographical concentration index G = 23.18 and imbalance index S = 0.43 reflect the imbalances of the spatial distribution of exhibition venues in China. In addition, the imbalance is mainly concentrated in Shandong, Guangdong, Beijing, Jiangsu, Zhejiang, Henan, Hunan, Sichuan and Fujian province. Thirdly, at the regional level, there is an obvious distance in regional distribution of exhibition venues through Gini = 0.93. The characteristics of this distance are that the number of the exhibition venues in eastern regions is more than that in western regions, and simultaneously exhibition venues develop well in central regions. Finally, it can be obtained from kernel density analysis that the spatial distribution of exhibition venues in China can be divided into three levels and three high-density areas are formed, i.e., the Bohai Rim region centered on Beijing, the Yangtze River Delta region centered on Shanghai, and the Pearl River Delta region centered on Guangdong.

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Conclusion: The findings show that the spatial distribution of exhibition venues in China has obvious agglomeration characteristics, and the regional differences are distinct. The distribution is also impacted by economic factors such as the foundation of economic development, transportation accessibility, supporting facilities and services. In order to further leverage the economic effect of MICE industry, the spatial layout of exhibition venues in China should be optimized. Besides, the use of exhibition venues should implement regional integrated management under the guidance of market-oriented principle.

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286 | A scalable adaptive four dimensional distance based on weighted algorithm for multispectral filter array image demosaicing

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Objectives: Filter array called color filter array in RGB cameras and multispectral filter array in more than 3 channels cameras is the most common technology in more than 90% imaging system, which is unified as multispectral filter array in this work. Demosaicing algorithms are important to multispectral filter array-based imaging system, as they estimate and reconstruction full multispectral images from the heavily under sampled raw images. It is worth noting that more than 1/2 spectral information is lost on each pixel. Up to now, there are no reported methods giving an analytic expression for demosaicing.

Methods: In this study, a new adaptive algorithm that abstracts deep correlation features from spectrum distribution, filter array pattern and raw images is proposed. It defines the difference between optical bands as spectral distance, the plane space difference spatial distance, and the texture difference of the images as gradient-based distance. The algorithm integrates all of these distances in an adaptive method for different dynamic range images demosaicing and reconstruction. It has been tested with images ranging from 3 to 6 spectral bands, the algorithm is demonstrated to have a better performance than state of the art method, as well as to be potentially extendable and scalable for multispectral images with larger number of spectral bands.

Results: In tests, the proposed algorithm achieves the best peak signal-to-noise ratio (PSNR) results on a public dataset with real and fake fruits, photo and face pictures and so on. It also gains the best visual results having smooth gray zone inter-object and sharp edges between objects, compared to other common algorithms such as bilinear, bicubic, and binary tree-based edge-sensing (BTES)-based algorithms.

Conclusions: The proposed method could integrate deep neural networks to study deep learning-based demosaicing algorithms as well as super-resolution algorithms. While the proposed algorithm identified an approach for image demosaicing across the whole frame of a multispectral image mathematically without arbitrariness, it did not mathematically determine the weight distributions for the different distances across all images adaptively, which is a topic for future investigations.

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287 | Research on distribution route optimization of B2C online supermarket based on data fusion algorithms under new retail mode

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Objectives: For online supermarket enterprises, the research of facility location and inventory alone cannot be optimal from a systematic point of view. Because there is a wide range of benefit paradox among the three, it is necessary to integrate and optimize the whole agile distribution network planning from a systematic point of view. Aiming at the more realistic requirement of logistics distribution network construction, further ensuring the agility of distribution routing scheduling based on inventory control, considering the requirement of reducing cost and improving customer service level, this paper studies the routing optimization model of B2C online supermarket distribution based on data fusion algorithm under stochastic demand conditions.

Methods: Facility location, inventory control and transportation routing decision-making involve three different levels of decision-making in agile distribution network design. From the point of view of the system, this paper studies the path optimization design of B2C online supermarket distribution network based on three aspects integration integrates the three levels of decision-making effectively, considers the interaction of the three factors synthetically from the point of view of the system and establishes the corresponding model. In order to solve the established model, this paper uses the artificial neural network in data fusion algorithm to train, in order to verify its effectiveness and practicability.

Results: The validity of the model and its algorithm is analyzed by an example. The results show that the algorithm is an effective algorithm for the optimization of distribution path in B2C online supermarkets. The experimental results show that the proposed B2C online supermarket distribution network can not only agile complete the entire distribution process, but also optimize the distribution path, thus greatly reducing the cost of distribution.

Conclusions: For many online supermarket enterprises in China, aiming at the strength of each online supermarket enterprise, the method proposed in this paper has been implemented in some large cities with self-built distribution logistics system and third-party logistics distribution enterprises. Considering time, cost and service, we have realized the unified allocation of resources, introduced the agile distribution idea into the distribution link, and carried out the unified integrated transportation of logistics in the agile distribution network. As a result, coordination and control of the total inventory can effectively improve the efficiency and efficiency of online supermarket enterprises, and highlight the competitiveness of this retail model.

288 | A study of multi-modal large-scale brain network plasticity of table tennis athletes based on dynamic amplitude of low-frequency fluctuation

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Objectives: The human brain is a complex system for information processing. Exploring the multi-modal large-scale brain network plasticity mechanism caused by table tennis can make good contribution to analyzing the insight features of table tennis itself, which will provide potent scientific basis for talents selection, table tennis training & monitoring and evaluation. Based on dynamic amplitude of low-frequency fluctuation (dALFF), the present study aimed to explore the plasticity of brain network at large-scale level in table tennis athletes with different training levels.

Methods: The table tennis professional athletes (PA), sports college student athletes (SCSA) and gender and age matched normal controls (NC) were recruited. Resting-stated functional magnetic resonance imaging data were collected, dALFF of each individual was calculated. SPM12 and dpabi_v3.1 were used to deal with three groups of dALFF maps. The three groups of dALFF maps were tested by one-way analysis of variance, and the post-hoc test was conducted in the brain regions showing statistic difference in ANOVA using two-sample t-test. In addition, Pearson correlation analysis was performed among the dALFF values of the significantly different regions and weekly training durations.

Results: The study found that three groups had significant differences in dALFF values in the left cerebellum and gyri temporalis medium. Further post-hoc tests showed that the

difference in the left gyri temporalis medium was caused by any of the two groups. The dALFF difference from high to low was SCSA>PA>NC. The difference values in the cerebellum was caused by SCSA and NC, where the dALFF values in SCSA were higher than those in NC. The dALFF values of the left cerebellum and the left gyri temporalis medium in SCSA were negatively correlated with the weekly training durations.

Conclusions: Table tennis training can cause changes in brain network plasticity. The variability of local brain spontaneous activity of table tennis athletes is stronger in the early stage than that of the later stage. With the strengthening of training, the brain spontaneous activity tends to be stable. From the point view of Resting-stated functional magnetic resonance imaging, it explained the mechanism of different brain network plasticity changes at early and later stage of table tennis training.

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289 | Research on the diversified development of leisure sports under the background of national fitness

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Objectives: Through the integration and application of leisure sports resources, we can achieve the goal of diversified development of leisure sports to meet the needs of learning and innovation of mass leisure sports culture, and then unify the national strategy of national fitness and mass sports fitness and leisure activities.

Methods: According to their daily work plan, business scope and service content, Leisure sports organizations and their related staff divide the fitness masses into groups by items or other standards, and organize the masses to carry out fitness activities within various capabilities. By means of performing fitness and taking various square dances and sports dances as carriers, the masses can create a unified cultural atmosphere of sports and art for fitness and entertainment through aesthetics and passion in the display of personal talents. By means of recreational and competitive fitness, the participants can obtain physical training and physical fitness

test in active activities, so as to expose their daily problems and summarize their experience in daily sports activities, and set up fitness models and cultivate their interest in fitness for other people in the form of various sports breakthrough activities.

Results: Inspired by various kinds of variety shows, especially sports games, the creation of a variety of fitness carriers has a multiplier effect on the organization and performance of leisure sports. Entertainment fitness program enables the fitness people as members of entertainment programs or activities to obtain the satisfaction of spiritual entertainment and the release of negative physical experience in their own role behavior. Interesting fitness program enables people to gain the life interest and spiritual enjoyment brought by fitness on the basis of sticking to the traditional knowledge.

Conclusions: For those who are physically ill, unhealthy and sub-healthy, the medical direction of sports leisure industry is a feasible and effective direction for national fitness. The main body-building contents are physical rehabilitation training, organ function improvement training and physical fitness improvement training, so as to effectively change the weak physique of the fitness masses. At the very least, we should improve the self-service ability of fitness people. Leisure sports is an innovative industry and product based on the scientific integration of modern competitive sports, traditional sports and other sports, which scientifically realizes the transformation of various skills of national fitness. It not only meets the sports needs and health pursuits of the masses, but also realizes the scientific unity of the development of national fitness industry and mass sports.

290 | Live streaming affordances and its relationship to impulse buying: An exploratory analysis

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Objectives: Live streaming services (e.g., Taobao Live), whereby video is broadcast in real time, bring consumers new shopping experience, which may encourage consumers to impulse buying. However, customer behavior in live streaming (e.g., impulse buying) has de facto received rather scarce attention. With scholars highlighted the importance of affordance theory in online shopping, it is necessary to understand live streaming affordance and its relationship to impulse buying.

Methods: Literature review and analysis was used to carry out in the study. In recent years, the flow experience in online

shopping has become very important throughout the world. Based on this fact, the stimuli (S)–organism (O)–response (R) framework guides to understand the process in which live streaming affordances (S) influence customer impulse buying (R) via positive flow experience (O). In addition, Regulatory focus was regarded as a moderating variable to make it complete. Thus, a theoretical model to interpret impulse buying in live streaming was constructed (see Figure 1).
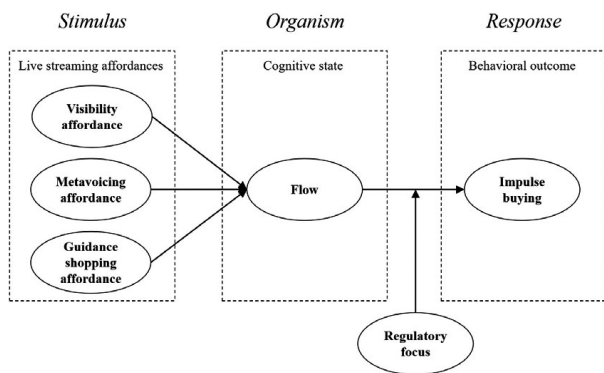

Fig. 1 The theoretical model:

Results: (1) Live streaming shopping is an innovative form of shopping favored by consumers, and the impact of live streaming affordances on impulse buying goes through a systematic process of "affordances-flow-impulse buying". (2) Visibility affordance, metavoicing affordance and guidance shopping affordance are the three major elements of live streaming affordances, which promote consumers have flow experience. (3) Flow is the bridge and important process inducing live streaming users to make impulse purchases. (4) The ultimate effect of flow experience on consumers is to produce customer impulse buying. (5) Regulatory focus moderates the relationship between flow experience and impulse buying. Specially, for the customers who belong to promotion focus, flow experience may be more effective in making them purchase impulsively; Relatively, for the customers who belong to prevention focus, the effect of flow experience on impulse buying may be weakened.

Conclusions: Taking live streaming affordances as stimulus variables, this research constructs a theoretical model, which helps to understand impulse buying and flow experience from a new perspective. Visibility affordance, metavoicing affordance and guidance shopping affordance, which are three main affordances in live streaming shopping, relate to flow experience and subsequently influence impulse buying. Operators in practice can enhance their affordances (visibility affordance, metavoicing affordance and guidance shopping affordance) to induce customers' flow experience, thus ultimately gaining more business profits.

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291 | The influence of internet usage on Chinese education expenditure—Based on China family panel studies (CFPS) data

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Objectives: Education has become an important element in economic and social development. In addition, increasing education expenditure is an important way to influence the educational achievements of children. Although previous studies have shown that the internet has a significant impact on the income of residents influencing education expenditure significantly, whether the internet affects the education expenditure of Chinese residents is still unclear. Therefore, this research mainly explores the impact of internet usage on the education expenditure of Chinese residents (EECR).

Methods: Employing 1663 valid samples from CFPS in 2016, this paper establishes OLS models to analyze the relationship between internet usage and Chinese residents' education expenditure. The models are as follows:

$$Y = \beta_1 \text{Internet} + \beta_2 \text{Mobile} + X_t + \varepsilon \tag{1}$$

$$Y = \beta_1 \text{Internet} + X_t + \varepsilon \tag{2}$$

$$Y = \beta_2 \text{Mobile} + X_t + \varepsilon \tag{3}$$

In these equations, Y represents EECR; Internet indicates whether using the computer to access the Internet; Mobile stands for whether using the mobile phone to access the Internet; X_t means the value of the control variables; ε is the residual term.

Results: There is a significant effects of Internet usage on EECR (see Table 1). In column (1), both ways of using the Internet have significant positive influences on education expenditure, which is verified by the information provided in column (2) and (3). In addition, the educational level of residents as a control variable, has a significant positive effect on EECR.

Conclusions: The internet usage can significantly increase education expenditure. Moreover, Mobile and Internet exert positive effects on EECR to various degrees. Governments, especially in China, can increase internet penetration rate to consummate the current educational policy.

TABLE 1 Regression results

VARIABLES	(1)	(2)	(3)
Internet	2135.10***	2741.87***	
Mobile	2484.56***		3412.20***
Gender	496.40	509.69	756.00*
Age	−102.10	−95.75	−93.81
Educational level	1220.16***	1265.92***	1377.56***
Income	−35.92	−33.95	−32.00
Constant	4503.48***	6002.42***	4386.81***
R-squared	0.08	0.07	0.07

Note: Robust standard errors in parentheses. ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$.

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292 | Research on tourism destination image perception based on network text analysis

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Objectives: As the crux of tourism marketing, it has attracted more and more attention to promoting tourism destination image in the fierce market competition, which can affect tourist behaviors in many ways. Meanwhile, there is a new platform for tourists from the combination of the internet industry and the tourism industry, which offer a new means for the management of the tourism destination image perception. So we combine online text with text analysis to study tourism destinations image, in order to better understand tourist behaviors. **Methods**: Taking Mount Qingcheng as an example, this paper makes a qualitative analysis of relevant online texts published on the tourism platform. Besides, we study tourists' perception of Mount Qingcheng, and find out the factors that lead to tourists' negative perception. Moreover, the paper will help relevant management departments find the problems existing in Mount Qingcheng, which has certain practical significance for improving destination image. In this paper, the effective travel notes and reviews, collected and screened from well-known Chinese tourism websites (e.g., Ctrip.com, Zhidao.com, vespidae), are taken as the original research materials. We use ROST Content Mining software to extract high-frequency words and emotional words from online texts. On the basis of this, we analyze it from six aspects: food, housing, transportation, traveling, shopping and entertainment. Then, we obtain the overall characteristics and emotional attitude of tourists' perception of Mount Qingcheng tourism image. In addition, we utilize a three-level coding table of contents to conceptualize the negative descriptions in the research materials, and obtain the coding table so as to analyze the negative perception factors of Mount Qingcheng in tourists' minds. **Results**: Firstly, according to the analysis of high-frequency words, tourists' perception of Mount Qingcheng's tourism image includes six elements of tourism, and it is found that there are still deficiencies in tourism catering, accommodation, entertainment and shopping. Secondly, the emotional analysis shows that tourists' positive perception of Mount Qingcheng is the majority and negative perception is the minority. Thirdly, through the analysis of negative perception factors, tourists' negative perception factors of Mount Qingcheng can be divided into 6 core categories and 15 secondary subcategories. **Conclusion**: Generally speaking, tourists are mostly positive when commenting on the tour of Mount Qingcheng. Moreover, they are satisfied with the overall image of Mount Qingchen and have less negative perception. However, Netizens' negative perception of Mount Qingcheng has a significant negative impact on the shaping of its tourism image and sustainable development, so it cannot be ignored. Netizens' negative perception of Mount Qingcheng is multifaceted and multi-level, involving six core categories: tourism experience, tourism service, tourism safety, tourism environment, tourism facilities and tourism supply. In order to enhance tourism destination image, attract potential tourists and promote the sustainable development of the scenic spot, Mount Qingcheng should be optimized from ecological protection, external publicity, optimized management and product development.

293 | The symmetric solutions of a type of matrix system of equations and its optimal approximation

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Objectives: With the rapid development of science and technology, the study of the constrained matrix equation problem is widely used in many fields such as structural design, system identification, automatics control theory, vibration theory, which makes it become a hot topic in the field of applied mathematics in recent years. So we urgently need a good method to solve the symmetric solutions of a type of matrix system of linear equations and its optimal approximation. **Methods**: For the convenience of research, the symmetric solutions of the matrix system of equations are discussed in this paper. Among them, two problems are mainly discussed.

An iterative method of solving the matrix equation is applied to solve this new type of matrix system of equations, thus a new iterative method and its optimal approximation for solving symmetric solutions of matrix system of equations is obtained. The symmetric solutions of the matrix system of equations are discussed systematically by this iterative method presented in this paper.

Results: The iterative method proposed in this paper can automatically judge the situation of the solution. When the matrix system of equations is consistent, we study the symmetric solutions and their optimal approximation of the matrix system of equations. A numerical example is carried out for computing a symmetric solutions of matrix system of equations in MATLAB on a computer. Using the proposed algorithm, we can obtain optimal approximation symmetric solutions.

Conclusions: There are some works and creative points in this paper. When the matrix system of equations is consistent, the symmetric solutions and their optimal approximation of the matrix system of equations are obtained. For any initial matrices, the symmetric solutions of the problem are obtained by finite iteration under the circumstance of rounding errors. If the special initial symmetric matrices are chosen, the symmetric solutions with least norm of the problem can be obtained. And the optimal approximation symmetric solutions for the given matrices are solved, thus wonderfully handle the proposed problem.

294 | On the simultaneous distribution of the fractional parts of different powers of prime numbers

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Objectives: Uniform distribution is to study the distribution of fractional parts of real numbers in interval [0, 1]. The definition of uniform distribution can also be extended to compact spaces and topological groups. In addition to its own development, uniform distribution has important applications in analytic number theory, probability theory.

Methods: A sequence $(x_n)_{n \in \mathbb{N}}$ of real numbers is simultaneous distribution modulo one if the sequence $(\{x_n\})_{n \in \mathbb{N}}$ is simultaneous distribution in the interval [0,1], where $\{x\}$ is the fractional part of the real number x. It is natural but more challenging to consider the distribution of sequence related to primes modulo one. Let $\theta \notin \mathbb{Q}$ be an irrational number and p be a prime number. A theorem of Vinogradov indicates that the sequence θp is simultaneous distribution modulo one as p runs over prime numbers. Suppose $\alpha > 1$ and not an integer, a very famous result showed that the prime power sequences (p^α) are simultaneous distribution modulo one as p runs over the prime numbers.

Results: In this paper we will study a generalized result in k-dimensional space. Let $k \geq 2$ be a fixed integer, $\alpha_1, \cdots, \alpha_k$ are fixed real numbers lying in the interval (1,2). We will prove the sequences $(p^{\alpha_1}, p^{\alpha_2}, \cdots, p^{\alpha_k})$ are also simultaneous distribution modulo one as p runs over prime numbers. Firstly, we mainly apply the van der Corput method and select the exponential pair (1/6, 4/6), (2/18, 13/18) to estimate the sum of type I exponents. Secondly, we mainly use Cauchy's inequality and select the exponential pair (2/18, 13/18) to estimate the sum of type II exponents. Spacing problem for the points is also used for estimating type I and type II. Then, by synthetically discussing type I and type II exponents, we can get the following results. For $h << Y^\delta$,

$$\sum_{Y < m \leq 2Y} \Lambda(m) e\left(hm^e + g(m)\right) \ll Y^{1-\delta} \log^{5.5} Y$$

Here $\delta = \min\left(2 - \alpha, 1/90\right)$, α is real number lying in the interval (1,2). Finally, apply Tolev's method and above exponential sum's estimation, we get the following important conclusions

$$S(x;\Gamma) = \pi(x)\left(\mu(\Gamma) + O\left(x^{-\delta_1}\log^{k+5.5} x\right)\right),$$

with $\delta_1 = \min\left(2 - \alpha_1, \alpha_1 - \alpha_2, \cdots, \alpha_{k-1} - \alpha_k, \alpha_k, 1/90\right)$. This indicates that for powers $\alpha_1, \cdots, \alpha_k$ lying in the interval (1, 2), the sequences $(p^{\alpha_1}, p^{\alpha_2}, \cdots, p^{\alpha_k})$ are also simultaneous distribution modulo one as p runs over prime numbers.

Conclusions: It is obvious that above result is better if $\min(2 - \alpha_1, \alpha_2 - \alpha_3, \cdots, \alpha_{k-1} - \alpha_k)$ is not very smaller. Otherwise, the result is very weak. This article provides a direction for research on how to improve δ_1.

295 | Cyber security monitoring on distribution automation system in ubiquitous internet of things

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Objectives: In the ubiquitous IoT environment, using real-time full-flow & full-service monitoring from the main station of distribution automation system to the terminal, to resist the cyber-attack.

Methods: The key technologies in this paper are as follows: 1. The protocol depth analysis of distribution automation system: through parsing the transmission protocol, restoring the fields in the application layer, the integrity and compliance of the data can be detected, and the characteristics of instruction behavior can be identified at the same time. Provide data for protocol anomaly detection and analysis of illegal business

behavior. 2. Scenario-based attack threat monitoring association analysis of distribution automation system: combined with the "three remote" business scenarios of distribution automation system, this paper analyzes the attack points and paths that can be used, and the security risks existing in each attack point. Build corresponding security threat scenarios. By analyzing the abnormal state of distribution terminal, network channel and master station equipment, the data acquisition model is established to provide data support for depth correlation analysis. The data collected in the scene is analyzed by correlation analysis, including normal network, distribution protocol, illegal service, special attack, network flow and other abnormal events, abnormal events and device logs, abnormal events and equipment status information, and so on. Correlation analysis methods such as exception events and asset information association. Based on multi-dimensional, broad perspective of analysis principles, in-depth mining potential security risks. 3. Self-learning of security monitoring rules in distribution automation system: using machine learning algorithms such as classification, clustering, and so on, regular mining of abnormal events, attack alarms and other data are carried out in depth. According to the flow of "algorithm selection, training model, test model, evaluation model and model tuning", automatic learning and self-optimization of distribution monitoring rules are realized.

Results: Under the premise of not affecting the stable operation of the service, the attack on the distribution automation system is effectively detected and recognized, and the security ability of the distribution automation system is improved.

Conclusions: During the deep integration of power industrial control systems with technologies such as the Internet of things, Internet+ and other technologies, the comprehensive security monitoring of cloud, pipe and terminal can effectively improve the ability of network security protection, and the related technologies can be applied to a variety of ubiquitous Internet of things scenes.

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296 | Safety risk monitoring of automated operation and maintenance system based on bioinformatics theory

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Objectives: Now with the increasing complexity and difficulty of operation and maintenance management, it is no longer possible to rely on a few "Operational Heroes". Enterprises need to use specialized, standardized and process-based means to achieve automated management of operation and maintenance. Through the automatic operation and maintenance system (AOMS), the hidden troubles are discovered in time, and the resources that need attention are actively told to prevent the problem. For example, the all-weather automatic detection and timely alarm can realize the "all-weather unattended" of the automatic operation and maintenance system, reducing the workload of the operation and maintenance personnel. Moreover, automated diagnostics minimize maintenance time and improve service quality.

Methods: For the traditional AOMS attack path generation algorithm to consider the AOMS attack expectation less, this paper proposes an AOMS attack path generation algorithm based on the AOMS attack expectation. The algorithm determines the test path by calculating the full path AOMS attack expectation for the critical component. The implementation of the algorithm is based on the solution of the AOMS attack expectation. Therefore, this paper proposes a solution method for industrial control vulnerability AOMS attack based on grey correlation analysis. The method uses 10 indicators such as encryption and authentication to solve the global utilization probability of the vulnerability, and uses the physical loss and information loss to calculate the global harm of the vulnerability.

Results: A method for solving the vulnerability of automated operation and maintenance system based on the principle of bioinformatics is proposed. This approach can assess the vulnerability of single-step attacks. Firstly, the paper puts forward the attack expectation evaluation formula and introduces the evaluation indicators of the two factors in the formula. Secondly, an association analysis method is proposed to evaluate the interaction between the vulnerabilities of the automated operation and maintenance system and the indicators affecting its security, quantitatively evaluate the vulnerability impact factor, and calculate the global utilization and global hazard of the vulnerability.

Conclusions: At present, with the continuous increase of the scale of the automatic operation and maintenance system, the network structure is complex and changeable, and the difficulty of attack target recognition and intention evaluation is increasing. How to help testers identify the accuracy of the intrusion purpose and the probability of achieving the intent of the attack through a real and reliable decision-making mechanism is called a challenging research work. This paper proposes a vulnerability threat assessment method based on the principle of bioinformatics for automated operation and maintenance systems, which helps testers find the path that is the easiest to implement in the system.

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297 | Research and design of intelligent operation and maintenance monitoring platform

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Objectives: With the continuous integration of industrialization and information technology, more and more information technology has been applied to the field of industrial control. However, the special requirements of the industrial control system for business continuity, high real-time and so on, make the traditional automatic operation and maintenance monitoring technology difficult to apply directly. Research on intelligent operation and maintenance monitoring platform for industrial control systems is needed.

Methods: The intelligent automatic operation and maintenance monitoring and management center designed in this paper is divided into data acquisition layer, analysis detection layer and visualization/alarm layer. Data acquisition layer: Responsible for the collection of original messages, protocol analysis (including the analysis of TCP/IP protocol stack and deep analysis of industrial control protocols), event detection and information aggregation and statistics. Analyze the detection layer: synthesize the message analysis result, statistical test result and summary statistical information from the data acquisition layer, perform the industrial communication network communication behavior modeling, and perform TCP/IP anomaly detection, industrial control command anomaly detection, industrial control key event detection, network Various security detections such as storm detection, network session anomaly detection, and threshold-based detection, and support detection based on user-defined rules. Visualization/Alarm Layer: Receives data from the analysis detection layer and detection results. On the one hand, it displays the alarms, on the other hand, it persists the data and performs multi-dimensional statistical analysis and presentation.

Results: The automated operation and maintenance platform designed in this paper realizes the automatic operation and maintenance processing for the industrial control system through two components (data probe and monitoring center). The data probe is deployed in the industrial control network to obtain the network traffic of the industrial control network through the switch mirror. The data are processed and reported to the monitoring center. The monitoring center is responsible for receiving the data reported by the data probes of each industrial control network, and performing unified analysis and detection. Show it to the administrator. The monitoring center adopts distributed deployment and centralized management. Multiple industrial control network audit probes are distributed and deployed next to each industrial switch and are managed by the automated operation and maintenance platform.

Conclusions: This paper takes the intelligent substation industrial control network as the research object, and designs and implements the automatic operation and maintenance platform for the intelligent substation industrial control network and system. The intelligent operation and maintenance of intelligent substation is the guarantee for the stable operation of the entire power system, which is of great significance for reliable power supply.

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298 | Block chain based on toxicology principle guarantees financial security

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Objectives: The block chain, i.e. distributed ledger technology, is a higher development stage of financial bookkeeping. It will promote the separate and independent individual centers and promote them into a unified multi-center with multiple parties, which will enable the participating parties to build trust at the technical level. This paper takes "creating the most Internet big data gene" as the strategic goal of its innovation and development, has selected the application of block chain in financial business as a research point, which ensures the credibility of the data on the chain and solves the trust of many Bank on the information of the bill notes.

Methods: Relying on the platform of "co-linking" of the industry cooperation by Banks of Jiangsu, the cross-Banks discounting business of bills was promoted nationwide, and the pain points in the inter-Banks bill business were transformed. Based on the decentralization of the block chain, the cooperative Banks adopts a distributed server deployment solution to solve the problem of depositing the information of the bill.

At the same time, in view of the "one-ticket-multiple-selling" and the false commercial drafts in the bill market, the Chain platform adopts a combination of on-chain and off-chain, which is, an agreement is signed with each cooperative under the chain to ensure the uplink data.

Results: The "Bank Movables Pledge" combines the Bank technology with the practice of Banks financial business, innovates the new format of the Bank, and builds an objective credit system of "logistics, information flow, and capital flow". It is the first in China to develop and successfully launch a full-process online Bank movable financing product. Through this system, customers can complete all processes such as borrowing, withdrawal, repayment, pledge, and jail on the "one-stop shop" online. Achieve 7x24 hours with the loan, the whole process takes only 2 minutes at the fastest. It cuts into the time-consuming and costly of financing of the real economy, and the pain points of high-risk information asymmetry in the financial industry. Bank can obtain enterprise pledge information upon real time through the Bank, help enterprises to obtain credit funds through the production and circulation of movable goods, and provide flexible and diversified loan programs. Enterprises can handle credit business on the whole line, and realize the production and operation with the loan. Capital turnover needs to reduce financing costs.

Conclusions: The launch of Banks movable property financing has greatly improved the efficiency of business processing. The products using Bank technology will penetrate the entire production process of the enterprise, provide comprehensive financial services, and strongly support the development of the real economy. It has greatly enhanced the commercial and social value of movable finance.

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299 | Product functional and hierarchical model construction—A case study of senior's nursing bed design

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Objectives: Medical care and nursing care for the elderly have become research focus in all circle as the era of aging arrives. Widespread concerns have arisen in design and development of assistance products suitable for the elderly. In this study, senior's nursing bed is taken as an example for detailed discussions. Generally, a modular design concept has been widely adopted in assistance products for the elderly. As product design methods are constantly iterative, optimized, and innovated, the modular design method has been widely applied thanks to its better solutions to product life cycle, manufacturing chain, supply chain, and maintenance, etc. Nevertheless, since products designed by this method are multi-functional, users' perceptions and operating burdens will be increased significantly with its miscellaneous and trivial functional elements, lowering the practicability and accessibility of product. Therefore, analyzing, screening, and extracting core functions from a plurality of functional elements is the key of modular design in product. In summary, a functional and hierarchical structure model of senior's nursing bed and its construction method have been proposed in the study, so as to screen, simplify and ultimately establish core functions of the product.

Methods: First of all, user's basic behavior sequences were extracted through studying the use flow of senior's nursing bed. And behavior steps corresponding to behavior sequences were analyzed, extracted, integrated and screened to gain typical behavior characteristics. In that case, a mapping relation of "behavior characteristics-product function" could be established to dig out functional elements of the senior's nursing bed in a comprehensive, in-depth and objective manner. Secondly, the interpretative structural modeling method was utilized to calculate and construct the hierarchical relationship between functional elements against the independence, dispersion and randomness between functional elements, thus, calculating weights of functional elements in each hierarchy with the analytic hierarchy process. At last, the functional and hierarchical model for the senior's nursing bed was constructed based on the above two steps.

Results: The hierarchical relationships and weights between functional elements of the senior's nursing bed could be obtained quantitatively by means of constructing the functional and hierarchical structure model, so that a variety of functional elements were classified as important functions, general functions and additional functions via analyzing, calculating, sorting and filtering. Hereby, based on the classified functional modules in product design, this paper carries on the design practice of senior's nursing bed.

Conclusions: Quantitative data statistics and calculation methods were applied in this study with the systematic proposal of the functional and hierarchical structure model and its construction methods, integrating theory with practice. Furthermore, the model and its construction method can be extended to the R&D and design of similar products through further perfection and optimization, enhancing the availability, practicability, and accessibility of product functions.

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300 | The effect of MICE education resources on city MICE industry development: An empirical study from China

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Objectives: Education is crucial to the development of any industry, and MICE industry is no exception. According to the statistics of the China Exhibition Data Statistical Report (2017), there are 336 colleges and universities have established MICE management majors in China, and the training of exhibition professionals has received extensive attention. However, the relationship between MICE education resources and development of city MICE industry has not been widely concerned. Therefore, this paper focuses on the impact of MICE education resources on the development of city MICE industry.

Methods: The sample of this study is 294 exhibition cities in China. Data from China Exhibition Data Statistical Reports (2016-2017), we establish OLS models to analyze the relationship between the MICE education resources and development of city MICE industry. The models are as follows:

$$y = c + \alpha \mathrm{SN} + \lambda \mathrm{CO} + \mu \tag{1}$$

$$y = c + \alpha \mathrm{USN} + \lambda \mathrm{CO} + \mu \tag{2}$$

$$y = c + \alpha \mathrm{TSN} + \lambda \mathrm{CO} + \mu \tag{3}$$

In these equations, Y represents the development of city MICE industry; SN represents the MICE education resources in Undergraduate and Training College; USN represents the MICE education resources in Undergraduate College; TSN represents the MICE education resources in Training College; CO represents the control variables.

Results: As shown in Table 1, the results indicate that SN, USN, and TSN exert positive effects on development of city MICE industry to various degrees. Hence, the impact of MICE education resources on development of city MICE industry is positive significant, noting that the training college, rather than the undergraduate school, promotes the development of MICE industry effectively. In addition, the economic development level and exhibition venue also have significant impact on the development of city.

TABLE 1 Regression results

VARIABLES	(1) Ln (Y)	(2) Ln (Y)	(3) Ln (Y)
SN	0.0595** (0.028)		
USN		0.0487* (0.028)	
TSN			0.0546** (0.025)
GRP	0.0128*** (0.001)	0.0125*** (0.001)	0.0130*** (0.001)
FIN	−0.0117 (0.007)	−0.0105 (0.007)	−0.0136* (0.008)
TIN	−0.0091 (0.014)	−0.0090 (0.014)	−0.0069 (0.014)
GOV	0.0116 (0.023)	0.0128 (0.025)	0.0174 (0.021)
EXA	0.0592** (0.026)	0.0689** (0.027)	0.0597** (0.024)
Constant	1.0700*** (0.009)	1.0700*** (0.010)	1.0700*** (0.009)
Observations	294	294	294
R-squared	0.337	0.326	0.335

Note: Robust standard errors in parentheses. ***$P < 0.01$, **$P < 0.05$, *$P < 0.1$.

Conclusions: These results clarify the positive impact of MICE education resources on development of city MICE industry, and identify the relative importance of the Training College. Relevant managers can make good use of these findings and constantly strengthen the use of MICE education resources in order to effectively enhance the development of the MICE industry in their city.

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301 | Design of metro vehicle detection system based on computer processing

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Objectives: The metro vehicle data are measured, collected and processed by computer and the data are transmitted and distributed through the network. It has the characteristics of fast response, high data accuracy, scientific and reasonable analysis results and quick release, which is more efficient than the traditional maintenance methods.

Methods: The on-line metro vehicle detection system adopts a modular framework based on ISA bus, which is controlled and managed by an embedded main board. It completes the functions of acquisition, processing and communication of vehicle data by the detection station. At the same time, the database access mode based on ADO technology is adopted, and the analysis technology is released on the network through the WEB server based on ASP technology. In the design and development of the whole monitoring system, the idea of system architecture mode composed of interconnection system is adopted. All subordinate systems use the same database management system. Vehicle on-line monitoring system is based on data acquisition, computer network and database application technology. Through data acquisition instrument, it collects the characteristic information reflecting the air gap status and relationship safety performance of linear motor of Metro vehicles. It is transmitted back to the data server through the network and processed and analyzed by the data processing program in the data server system. The comprehensive treatment is carried out, so that the faults affecting the safe operation of vehicles can be reported in time, which forecasts the hidden troubles that may occur. At the same time, by setting up WEB server, the results of the analysis can be published in the LAN for users at all levels to browse.

Results: After testing, the function and performance of the system have reached the expected goal. After the completion of the development, the efficiency and accuracy of metro vehicle maintenance have been improved, and the safety performance of metro vehicles has been better guaranteed.

Conclusions: Because of the integration of various technologies, the system has a certain degree of complexity. Firstly, the basic physical principle and main technical basis of the system are analyzed, and the solutions are put forward. Then, the design and implementation process of the system are described in detail. Finally, the main configuration, implementation interface and test results of the system are given. With the further development of computer technology, embedded system, database management, network data publishing and other technologies will further promote the on-line monitoring technology of Metro vehicles, which will enable Metro maintenance to obtain more powerful technical support and have broad prospects for development.

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302 | Environmental information disclosure, reputation and enterprise value: Evidence from China's heavy pollution listed companies operating data

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Objectives: Based on the management data of heavy pollution listed companies in China, this paper aims to explore the relationship between environmental information disclosure and corporate reputation, as well as corporate reputation and enterprise value. Environmental problems are a key topic in the present era, and the impact of heavy pollution enterprises on the environment has been widely concerned by all sectors of society. Based on the operation data of Shanghai and Shenzhen A-Share heavy pollution industry listed companies in the 2015-2017 years, this paper gets the result of the influence between environmental information disclosure and corporate reputation, as well as corporate reputation and enterprise value.

Methods: This paper explores the relationship between environmental information disclosure and corporate reputation, as well as corporate reputation and enterprise value, using the operating data of Shanghai and Shenzhen A-share heavy polluting industry listed companies during 2015-2017. We used a method of multiple linear regression analysis to construct a model to study the impact of environmental information disclosure on reputation and the impact of reputation on enterprise value. Because the factors affecting reputation and enterprise value are diverse, the method of multiple linear regression can comprehensively consider the influence of multiple factors on the dependent variable, making the result more relevant.

Results: The prediction of regression results shows that in the multivariate regression model with reputation as the factor, the disclosure of enterprise environmental information is tested at 1%, the coefficient is 0.274, which shows that there is a positive correlation between environmental information disclosure and enterprise reputation of heavy pollution listed

companies. Heavy pollution listed companies actively carry out positive environmental information disclosure can often enable enterprises to obtain a reputation; in the multivariate regression model with enterprise value as the factor, the enterprise reputation passes the test at 5% level, the coefficient is 0.518, which indicates that the enterprise value is positively correlated with the enterprise reputation, and after the heavy pollution of the reputation of the listed company, The value of the business will also rise.

Conclusions: The results show that heavy pollution of listed companies to actively carry out positive environmental information disclosure can often enable enterprises to obtain a reputation, and re-pollution of the reputation of listed companies, the value of enterprises will also increase. This provides good advice to businesses, governments, and other relevant players. Therefore, the Government should formulate laws and regulations on environmental information disclosure and strengthen supervision and inspection of environmental information disclosure of enterprises, and investigate and punish violations, enterprises should improve the quality of enterprise environmental information disclosure and work together to build a social evaluation system on the quality of environmental information disclosure.

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303 | Large data feature extraction of R-tree index structure fusion knowledge map under hadoop

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Objective: As a new technology means with powerful semantic processing ability and open organization ability, the map is one of the hot research topics. The knowledge map can be divided into general domain knowledge map and vertical domain knowledge map according to the knowledge coverage. At present, the research of knowledge map mainly focuses on the general field, and there is less research for the vertical field. The traditional information integration method can't manage the data from the perspective of knowledge.

Methods: This paper proposes a knowledge map of carbon trading field in order to integrate the knowledge of carbon trading field from web data. This paper focuses on the knowledge acquisition of knowledge map, and proposes a technical framework for the construction of knowledge map in the field of carbon trading. The main research contents and achievements are as follows: First, for the characteristics of data multi-source isomerism and decentralized autonomy in the field of carbon trading, By constructing the data extractor, the relevant data in the field of carbon trading are collected automatically from the network resources. Secondly, according to the data of different structures, different knowledge extraction methods are proposed. For semi-structured data in the Encyclopedia site, knowledge is obtained by building web data wrappers. Data mining technology is used to calculate the extraction and relationship of scientific research entities, and distributed index is built based on the entity knowledge map to realize multi-dimensional knowledge retrieval rendering and related navigation.

Results: (1) The knowledge map based on marine science and technology resources was constructed, and a set of feasible methods for the knowledge map of science and technology resources-oriented transformation was proposed. On this basis, according to the application characteristics of knowledge map, knowledge calculation is abstracted into three categories: real-time approximate knowledge calculation, offline data batch calculation, and graph structure knowledge calculation. (2) Taking the regional research hotspot as an example, the paper expounds how to use the online aggregation algorithm to realize the real-time approximation of knowledge calculation, and proposes an optimized sampling algorithm to further improve the processing efficiency of the online aggregation algorithm. (3) The above knowledge map construction and knowledge calculation research results are applied to the search and recommendation platform for scientific and technological talents.

Conclusion: The current knowledge discovery platform is mainly established at the entity level, and semantic retrieval needs to be further studied and deepened. The knowledge discovery platform based on the knowledge map construction realizes the organization index of data at the knowledge level, satisfies the user's precise knowledge retrieval needs, and enhances the user experience.

304 | Research on the design of children's books based on virtual reality interactive technology

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Objectives: With the development of network technology, children's reading products integrated with virtual interactive experience can not only make the original abstract concepts

visually displayed in front of children, but also provide children with subjective interactive reading experience, which can solve the problem that children's cognitive ability is insufficient in the early stage of education and they cannot absorb knowledge well.

Methods: At the first, Mobile "3D" reading product design; The use of 3D rendering technology, virtual motion tracking and other technologies, so that children more intuitive grasp the knowledge. The second, VR interactive reading products; Through VR motion sensing devices to identify the human body, in the way of games for children to receive learning. The third, Intelligent reading robot, through voice interaction, video call, face recognition and other functions, man-machine interaction learning.

Results: Virtual reality technology should integrate science and art to make it a new interesting and more user-friendly reading experience design. Therefore, the design of children's reading products for virtual interactive experience must have three elements: fun, education and fun; Profound, immersive; Novelty, originality.

Virtual reality technology should integrate science and art to make it a new interesting and more user-friendly reading experience design. Therefore, the design of children's reading products for virtual interactive experience must have three elements: fun, education and fun; Profound, immersive; Novelty, originality.

Conclusions: In the future, children's reading products will pursue the development of entertainment experience and virtual interaction design as well as the development trend of initiative and personalization.

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305 | A processing algorithm and data mining technology of the QR code digital image

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Objectives: Because the QR code is easy to be affected by the scanning equipment, printer and external environment, which leads to the low QR code printing quality, and the recognition of QR code will be greatly affected. This paper puts forward the digital image processing technology and data mining method of QR code.

Methods: The adaptive histogram equalization algorithm makes up for the shortcomings of the traditional histogram equalization algorithm. It is mainly by pushing down the neighborhood of a pixel. After scientific pushing down, a transformation function can be obtained. By applying the transformation function on this pixel, the relevant data can be obtained. The light intensity histogram is used to reverse the transformation function of the square neighborhood of each pixel in the image, and then, the transformation function is applied to the predicted corresponding pixels. The size and time information of each pixel's neighborhood on two-dimensional codes are important parameters for adaptive histogram equalization calculation. These neighborhoods constitute their own scales. This histogram equalization calculation method reduces the contrast of large scale and improves the contrast of small scale. It should be noted that particular attention should be paid to the pixels close to the edge of the two-dimensional code image, because the neighborhood of these pixels is not in the image area, which can be symmetrically highlighted by the boundary of the two-dimensional code, and then copied.

Results: By using MATLAB software to simulate the contrast enhancement algorithm, the adaptive histogram equalization calculation is realized in the simulation process. The experiment first calculates only one two-dimensional code, and it can be concluded that the dim figure on the left side is the most original one. The two-dimensional code in the middle is the result of brightness enhancement by computer. The two-dimensional code on the right side is the calculation structure after the application of adaptive histogram equalization algorithm, and the results are more obvious. Secondly, the number of two-dimensional codes is adjusted to three, and the middle image is the result of adjusting the three two-dimensional codes. The result of this operation is easy to cause some areas of the pattern to be too bright and other areas to be dark. The three two-dimensional coded images obtained by adaptive histogram equalization calculation are relatively clear and decoding efficiency is high.

Conclusions: In this paper, the decoding of two-dimensional code image under special circumstances is analyzed, and good results have been achieved, which is conducive to more thorough data analysis for enterprises, hoping to lay a good foundation for the long-term development of two-dimensional code line platform, and also lay a good foundation for information analysis for the continuous development and growth of commercial oxygen enterprises.

306 | Application of fuzzy clustering algorithm in image segmentation

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Objectives: The traditional image segmentation algorithm is impossible to predict which noise pollution the image will be contaminated. Based on this situation, a new algorithm is introduced in this paper. Fuzzy clustering algorithm is the key problem of the selection for neighborhood average, and further realizes the mean filter for image noise processing through the median filtering image, which is conducive to better treatment of the salt and pepper noise type.

Methods: Two information of grayscale and spatial distribution are used in image, and the sliding windows are taken for each pixel in the image. Combining the feature of space pixels, the pixel neighborhood shows a strong correlation, and the pixels have similar characteristic values in the domain. When noise enters the image, a large number of pixels in the field will also encounter interference, which will increase or decrease. Most of the pixels still maintain this correlation. The pixels can be rearranged in the field, some obtained median points in the middle position can get the average value. This value is also placed in the objective function of the location pixel constraint.

Results: The fuzzy clustering algorithm establishes the target function based on the gray point of the image, and the gray level of the image refers to the incomplete information formed by the processing of the image. Therefore, the objective function produces an image that cannot be fully described, resulting in the inaccurate description of the image characteristics, which is based on the features of gray scale. The objective function is used to describe the image in a comprehensive way, and the image has already contained a large area. The distribution patterns of each area are also different. A goal function describing the integrity and local attributes of the image is constructed to effectively solve the corresponding problems. Wavelet transform can accurately reflect the characteristics of the image.

Conclusions: The traditional image segmentation algorithm is a class of pixels for segmentation, while exhibiting the characteristics. However, due to the large number of features of the image affect the pixel attribution, such as edge and texture, and so on, the pixels in the attribution aspect show their characteristics. The fuzzy clustering softening subdivision algorithm based on fuzzy clustering algorithm shows great application value. The effectiveness of clustering is reflected in the comprehensive application of measurement by describing the characteristics of the image. Therefore, the choice of measurement has a direct impact on the success or failure of segmentation results. In the fuzzy clustering algorithm,

the use of kernel function is also an important development trend.

307 | Impact of knowledge governance of R&D team on radical innovation performance of enterprises: Empirical evidence from ceramic enterprises

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Objectives: Although many ceramic enterprises have set up R&D teams with knowledge heterogeneity, the performance of breakthrough innovation is still unsatisfactory, which illustrates the complexity of the relationship between knowledge heterogeneity and breakthrough innovation, and some of the regularities have not been properly explained and studied. Based on this, this study will discuss the relationship between knowledge governance and breakthrough innovation performance of R&D team.

Methods: In this study, literature research, interviews, questionnaires, statistical analysis and other methods were used to study the impact of knowledge governance and breakthrough innovation performance of R&D team in ceramic enterprises.

Results: The results of the study are helpful to further understand the internal mechanism of knowledge governance on breakthrough innovation performance of R&D team in ceramic enterprises through exploratory learning and exploratory learning, as well as to China's ceramic enterprises. How to promote organizational learning through knowledge governance within R&D team to improve the performance of breakthrough innovation has important theoretical value and practical guiding significance. Firstly, the intermediary role of organizational learning in the relationship between knowledge governance and breakthrough innovation performance is analyzed and tested. Secondly, it explores and confirms the moderating effect of social capital on the relationship between knowledge governance and organizational learning. Thirdly, reveal and verify the moderating effect of environmental dynamics on the relationship between exploratory learning and breakthrough innovation performance. Finally, the paper puts forward the strategy of improving the performance of breakthrough innovation of ceramic enterprises based on knowledge governance. The basic expression of R&D enterprise value synergy model is as follows:
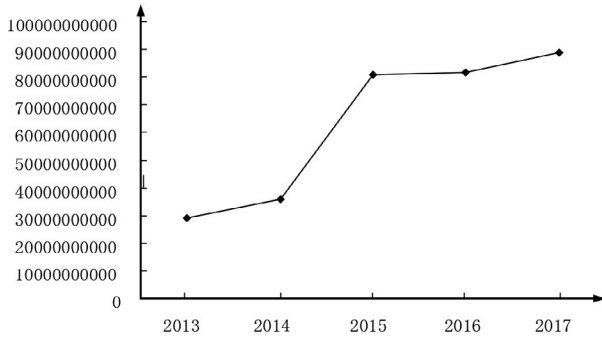
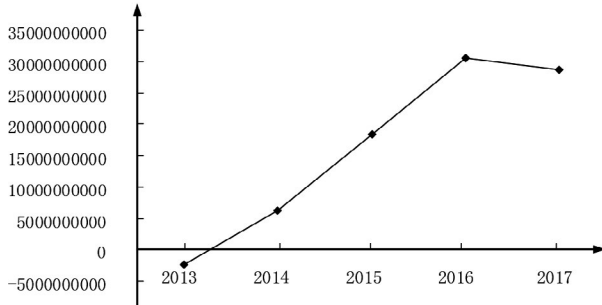**Figure 1.** Changing trend of investment capital of group

Figure 2. Evaluating trend of group

$$V_t = I_0 + \sum_{t=1}^{\infty} \frac{\text{EVA}_t}{(1+\text{WACC})^t}$$
$$= I_0 + \sum_{t=1}^{\infty} \frac{\text{NOPAT}_t - I_{t-1} \cdot \text{WACC}}{(1+\text{WACC})^t}$$
$$= I_0 + \sum_{t=1}^{\infty} \frac{I_{t-1}(\text{ROIC}-\text{WACC})}{(1+\text{WACC})^t}$$

Conclusions: In the process of research and development of ceramic enterprises, team members need to constantly fully excavate and express their opinions, until the other side really understands, excavate learning in the team will naturally be stimulated; on the other hand, exploratory learning activities can enable team members to learn about new business, new technology and new capabilities, without sticking to existing technology. The trend of investment capital and Group from 2013 to 2017 is shown in Fig. 1 and Fig. 2. The different dimensions of corporate social capital reflect the opportunities, willingness and ability of knowledge resource exchange, which will play a moderating role in the relationship between knowledge governance and organizational learning. Organizational learning often means novelty, risk and uncertainty. Therefore, from the point of view of the nature of organizational learning, it is generally associated with breakthrough innovation, but the degree of their relationship is affected by the dynamic external environment of ceramic enterprise the R&D value synergy management evaluation index of group, which takes 2017 as the base period, is calculated as follows:

$$\text{VCEI}_{car} = \left\{ \frac{\text{EVA}_1}{\text{WACC}-g} \times \left[1 - \frac{(1+g)^n}{(1+\text{WACC})^n} \right] + \frac{\text{EVA}_{n+1}}{\text{WACC}-g_n} \times \frac{1}{(1+\text{WACC})^n} \right\}$$
$$/ \frac{\text{IC}_1}{\text{WACC}-f} = \frac{\text{EVA}_1}{\text{IC}_1} \times \frac{\text{WACC}-f}{\text{WACC}-g} \times \left[1 - \frac{(1+g)^n}{(1+\text{WACC})^n} \right] + \frac{\text{EVA}_{n+1}}{\text{IC}_1} \times \frac{\text{WACC}-f}{\text{WACC}-g_n}$$
$$\times \frac{1}{(1+\text{WACC})^n} = \frac{28642526017.77}{88831412908.93} \times \frac{5.5\%-5.14\%}{5.5\%+6.07\%} \times \left[1 - \frac{(1-6.07\%)^3}{(1+5.5\%)^3} \right] +$$
$$\frac{28642526017.77 \times (1-6.07\%)^3}{88831412908.93} \times \frac{5.5\%+6.07\%}{5.5\%-1\%} \times \frac{1}{(1+5.5\%)^3}$$
$$= 58.80\%$$

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308 | Research on power grid knowledge representation and modeling based on ontology

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Objectives: The State Grid is an important part of the national energy chain and a significant establishment of the national integrated transport system. The dependence of the power from modernization of all departments and all aspects is gradually increased. The demand for the quality and reliability of power supply is increasing with every passing day. In recent years, the rapid development of smart grid emphasizes a higher requirement and standard of construction on the current regular grid.

Methods: In today's power grid construction, the challenges that are urgent to face are surging data and information overload problems due to the adding of a large number of intelligent measurement devices. Another reason for the problem is that data and information themselves are insufficient to provide direct and valuable reference information for the staff due to a lower level of abstraction. For this problem, this paper presented the concept of power grid knowledge. Operating and historical data, operating procedures and multi-source information that could supply guidance were considered as power grid knowledge after abstract. Based on a deep understanding of the grid domain knowledge, considering the characteristics and research needs of power grid knowledge, it presented a method for grid knowledge classification.

Results: This paper unified grid domain knowledge concepts and advanced the ontology-based method for grid knowledge representation, including OWL and ontology concept set symbol. It specifically explained the intrinsic relationship between different kinds of grid domain knowledge and the synergy mechanism. Then, it established Ontology-based knowledgebase according to the knowledge representation,

in which the power grid knowledge was stored in organic ontology chains. With the direction of power grid knowledge collaborative processing mechanism, it laid a foundation for the knowledge discovery and extraction. At last, it made a model of the grid knowledge based on Protégé, which made the relationship between knowledge more specific, and the reasoning process of knowledge visualized and formalized.

Conclusions: This study formalized the classification in power grid domain. The method of knowledge representation based on ontology laid a foundation for the integrated application of the grid domain knowledge, solved the existing problem of much data grid with less knowledge, and provided a meaningful reference for power grid construction.

309 | Optimization of maintenance strategy for key systems of metro vehicles

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Objectives: The main purpose of optimizing vehicle maintenance strategy is to ensure the reliability and safety of vehicle equipment maintenance as a whole, which can minimize the maintenance cost of maintenance equipment and realize the humanization of maintenance strategy, the environmental protection of maintenance process and operation, so as to maximize the benefits of vehicle transportation production activities. By analyzing the factors of vehicle equipment failure rate, fault characteristics, equipment type characteristics, failure mode and failure consequence, this paper further explores the optimal relationship between equipment maintenance cost and failure loss consequence and severity and establishes an optimization calculation model to determine and optimize maintenance strategy.

Methods: On the basis of statistics of vehicle equipment fault data and analysis of equipment failure modes and characteristics, this paper uses fuzzy theory and analysis method to make comprehensive decision, and puts forward maintenance mode decision of different equipment. For the determination of maintenance level, a decision model is constructed

to realize the determination of maintenance level. The maintenance cycle of specific equipment is determined by multi-objective optimization, and finally, the overall optimization decision of maintenance strategy is achieved. After the maintenance strategy of equipment is determined by using the combination of fuzzy theory and decision-making, it is necessary to make maintenance level decision for specific components. The determination of the level in after-event maintenance strategy is based on the level of fault hazard. Periodic maintenance strategy is based on equipment safety and effectiveness to determine the level. The condition-based maintenance strategy is to determine the maintenance level based on the operation status and deterioration degree of the equipment.

Results: The analytic hierarchy process can combine qualitative and quantitative analysis organically. It not only ensures the rationality and unity of the model, but also enables decision-makers to make full use of their valuable experience and ability to determine maintenance strategies. At the same time, the decision-making theory model of maintenance level is established to provide good support for decision-making system. According to the three principles of reliability, effectiveness and economy of equipment, the optimal maintenance cycle of specific equipment is determined by multi-objective optimization.

Conclusions: The decision-making model of vehicle equipment maintenance strategy and maintenance level of specific equipment is established. An optimization analysis method is put forward for equipment maintenance strategy optimization: according to the strategy optimization of specific system classification, after-event maintenance strategy optimization of failure consequence, strategy optimization of unit time loss, downtime and failure frequency, strategy optimization of equipment failure consequence and maintenance cost, and quantitative optimization of comprehensive cost based on actual equipment failure statistics.

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310 | A computer vision calibration method based on Halcon optimization

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Objectives: This paper proposes a machine vision application for the needs of actual situation of the industrial site, which can be divided into different modules according to the function, thus forming a unified system structure.

Methods: The technology of computer vision positioning based on template matching is used. The practical significance of software calibration is to establish a mathematical model of camera imaging, which describes the process of point projection to the imaging plane in the world coordinated system. It is the ultimate goal of software calibration to accurately calculate the internal and external parameters involved in the model. The position of the target is expressed in pixel coordinates. After the calibration is completed, the coordinates in the imaging plane coordinate system can be obtained in millimeter. The Halcon function library provides a calibration method of the camera's internal and external parameters, which is simple and reliable and the calibration results are reliable.

Results: The average error of the calibration results of the 10 images is averaged, and the average error is 0.35 images without considering the lens distortion. Prime. The comparison between the calibration error of the literature and the calibration error of this paper. It can be seen that the calibration accuracy is high. In the precision test, the template of the target object is input first. Through accurate measurement, the target object is placed in a fixed position in the camera's field of view. After the camera takes pictures, the matching result is recorded.

Conclusions: The testing accuracy, matching speed and operation stability of the software meet the requirements of the system. It is suitable for the computer vision system that needs to be captured and assembled in industry. Improving the adaptability of visual software and improving the speed of algorithm matching are the main concerns in the next stage.

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311 | A resource scheduling algorithms for wireless communication networks based on chaotic neural network

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Objectives: The widely studied chaotic neural network model introduces a negative feedback term with chaotic characteristics in the Hopfield neural network, and then obtains the chaotic neural network model. Therefore, it is necessary to first introduce the Hopfield neural network before deeply researching the chaotic neural network. The nonlinearity and high dimensionality of feedback neural networks make it difficult to determine the state trajectory of existing tools, and even chaotic phenomena may occur. Due to the complexity of the neural network with chaotic characteristics, it has been widely studied.

Methods: This paper simulates the resource optimization algorithm of OFDMA single-cell wireless communication system based on chaotic neural network in Matlab platform. The base station is located in the center of the network and the carrier frequency is set to 2 GHz. The number of communications services is 4. The number of users is 6, and the comprehensive priority is 1:2:2:3:4:4. The quantified chaotic binary sequence was tested for correlation characteristics. The length of the sequence was 2000, and the correlation interval was -500 to 500.

Results: From the experimental results, it can be seen that the chaotic sequence has sharp autocorrelation properties and very small cross-correlation values. It also can be seen that the chaotic binary time series is pseudo-random and can be applied to stream cipher encryption. Chaotic neural networks use phase space to search quickly in the global scope. Compared with the previous algorithm, the disadvantages of falling into the local optimum are solved, and the convergence is greatly improved compared to before.

Conclusions: In the field of wireless communication, with the increase of services and users, its wireless resources have become more and more tense. How to allocate resources and make rational use of resources efficiently is the key to ensuring the operation of all businesses. The existing algorithms for optimizing wireless communication resources include adaptive feedback, wireless cooperative channel multiplexing. The ubiquitous algorithm has high complexity, and there is a certain degree between the final calculation result and the optimal solution space. The algorithm proposed in this paper can effectively optimize the interface resources of the entire wireless communication system and improve the resource allocation rate.

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312 | Trial research on CO emission from high-speed over fire air (OFA) of tangentially pulverized coal-fired boiler with deep air staging

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Objectives: CO is the largest number of gaseous pollutants in urban air. The toxic effect of CO on organism is mainly due

to its easy binding with Hb and inhibiting its ability to carry O_2, which leads to hypoxia of various tissues and cells of organism and causes hypoxemia. Coal combustion is the main reason to produce CO. In this paper, a high-speed OFA trial of a pulverized coal boiler under deep air staging was carried out to study its impact on CO emission reduction.

Methods: A 75t/h boiler was retrofitted with deep air staging and high-speed OFA.

After the coupling calculation of OFA volume in the furnace, four OFA nozzles are designed, the air volume of the nozzles is evenly distributed, the OFA accounts for 40% of the total air volume, and the OFA nozzle speed is 30-80 m/s. Orthogonal tests were carried out under 45t/h, 60t/h and 75t/h boilers with OFA of 0%-50%. Pitot tube was used to measure air speed and test 340 was used to measure CO and NOx concentration.

Results: In order to find a reasonable air distribution scheme and meet the triple criteria of stable operation, environmental standard and CO control, trial research on different working conditions of high, medium and low loads is carried out. The trial results show that when the OFA is 0%, the original CO emission of the boiler is 297 ppm. After retrofit, in low load (45t/h), the proportion of OFA 24%, and CO is OFA when the air speed is 47 m/s. In medium load (60t/h), 33% of the OFA and 53 m/s of the air speed, CO is burned out. At high load (75t/h), 40% of the OFA and 71 m/s of the air speed, CO is burned out. In the above conditions, the NOx concentration and the exhaust gas temperature are basically the same.

Conclusions: Large proportion and high-speed OFA design is suitable for reducing CO of pulverized coal furnace under various loads. At present, it is an effective means to improve boiler efficiency and reduce nitrogen oxides at the same time.

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313 | Research on deep aggregation method of scientific literature content based on semantic analysis

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Objectives: With the popularization of computers and the Internet and the development of science and technology, the era of big data has arrived. The most direct manifestation in the field of academic research is the skyrocketing number of scientific literatures. While benefiting from the vast amount of scientific literature, they are also deeply troubled by them, which seriously hinders the effective acquisition and utilization of scientific and technical literature content by scientific researchers.

Methods: For the current problems, this paper proposes a method, which is called "Revealing down, aggregating up", to deeply reveal the internal characteristics and fine-grained description of the knowledge of scientific literature content. The "Revealing down" is a process of knowledge disassembly. It uses text mining technology to collect text fragments from scientific literature. The important knowledge objects (terms) and the semantic relations between them are extracted, and the semantic triplet structured expression form ("term 1 + relationship + term 2") is obtained, and then, it is disassembled on the semantic structure. Stir operation, and reorganize according to the semantic logic relationship existing in it. Finally, construct a plurality of scientific and technical literature content maps by graphical representation of nodes and edges; The "Aggregating up" is a process of knowledge organization, which uses this content map. Fine-grained knowledge association aggregation is carried out from multiple dimensions of the internal characteristics of the scientific literature, and knowledge reasoning can be realized at the same time, and tacit knowledge between scientific and technological literatures can be found.

Results: In this paper, the titles and abstracts of 58 clinical trial research papers related to the topic of "non-small cell lung cancer" from 2018-01-01 to 2018-12-31 in the PubMed database were selected as the original data sets. Experiments were carried out using statistical analysis methods, retrospective analysis methods, comparative analysis methods, and inferential analysis methods to complete the feasibility experiment of the proposed method, the comparison experiment with SemRep, and the scientific literature content association analysis and knowledge reasoning analysis experiment based on content map. The experiment proves the rationality, feasibility and superiority of the method, and obtains 8 tacit knowledge.

Conclusions: Experiments showed that the proposed method can deepen the organization of scientific literature from the external features of the literature to its internal features, realize the fine-grained description and multi-dimensional aggregation of knowledge of scientific literature content, and discover the tacit knowledge between documents. This greatly shortens the reader's reading time, improves reading efficiency, and improves knowledge serviceability.

314 | A recognition method of lesion morphology based on extreme learning machine

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Objectives: To study a better method to solve the problems in medical image field, which can recognize the shape of the lesion better. However, the traditional neural network learning algorithm is also inadequate. Therefore, it is always the goal of the researchers to find the algorithm which is easy to control, has good generalization ability, fast and can obtain the global optimal solution, and is used to improve the performance of RBF.

Methods: Extreme Learning Machine algorithm is dedicated to SLFN and improves its performance. The algorithm first sets the number of neurons in the hidden layer, without the need to preset other parameters. The thresholds and connection weights of the neurons are randomly generated during the training process, and no adjustment is needed. After the training, the global optimal solution can be obtained. In order to evaluate the performance of ELM, ELM was applied to the classification of lesion morphology, and the results were compared with the performance and operation speed of traditional feedforward networks (BF, RBF, GRNN, PNN) and discuss the contrast effect after using PCA dimension reduction.

Results: Simulation results show that the algorithm has good generalization ability, simple operation, fast speed and so on. Finally, this section uses multiple extracted features and uses this algorithm, BP, GRNN, PNN and RBF to compare and evaluate their advantages and disadvantages. It can be concluded that the prediction accuracy of ELM, PNN, and GRNN were 84%, 62.5% and 33.3%, respectively, using raw fractal data. The prediction accuracy of ELM, PNN, and GRNN after fractal data PCA was 79%, 62.5% and 33.3%, respectively. This shows that ELM has good performance in classification and pattern recognition of lesion morphology fractal data.

Conclusions: Practice shows that this method has a good effect on the recognition of lesion shape. With lesion morphology features of infrared image from cases for the effect of lesion target, ELM is an effective method to detect the lesion target infrared image.

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315 | Design of cooperative learning education model based on mutual information of educational data

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Objective: In the era of knowledge-based economy, promoting the development of talents is increasingly inseparable from the role of the government, industry and universities. Firstly, as an important base of knowledge production, processing, dissemination and application, colleges and universities shoulder the important task of personnel training, especially in the development of human resources.

Methods: Three main research topics were mainly solved: (1) the key factors and their constituent elements affecting the training of Government-Industry-University collaborative talents; (2) the intermediary mechanism and key dimensions affecting the training of Government-Industry-University collaborative talents; (3) the mode selection of the training of Government-Industry-University collaborative talents based on the characteristics of industrial development in Hunan Province.

Result: Based on the internal and external aspects of talent cultivation in Colleges and universities, this paper puts forward the reform strategy. As far as the development of disciplines and specialties in Chinese higher education is concerned, its basic development strategy is mainly to adjust the specialty structure, adapt to social needs, meet the needs of industries (occupations), optimize the curriculum structure, strengthen the construction of teachers, improve the quality of teaching, consolidate professional conditions, establish effective mechanisms, and promote specialty construction.

Conclusion: The strategy and evaluation mechanism of talent cultivation in the perspective of employment is also an important part of the internal construction model, and is in line with the function of the new perspective. Building employment-oriented talent training mode is a systematic project, which requires both internal construction and external support of institutions of higher learning.

316 | The relationship between autophagy, proliferation and apoptosis of pulmonary artery smooth muscle cells under hypoxia

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Objectives: The exact pathogenesis of hypoxic pulmonary hypertension characterized by pulmonary vasoconstriction and remodeling remains unclear, but the pulmonary small vessels reconstructed after hypoxia can be restored to normal. Recent studies have shown that autophagy of pulmonary artery smooth muscle cells during hypoxia is closely related to apoptosis of pulmonary artery smooth muscle cells after reoxygenation. We think that different degrees of autophagy have different significance on the proliferation and apoptosis of pulmonary artery smooth muscle cells, and it is also one of the important mechanisms of autophagy and apoptosis of pulmonary artery smooth muscle cells after reoxygenation in hypoxic phase.

Methods: In this study, pulmonary artery smooth muscle cells of Sprague-Dawley rats male rats were isolated and cultured by tissue patch method, and experiments were performed on cells from passages 3 through 5. Pulmonary artery smooth muscle cells were cultured at 21%, 10%, 5% and 1% oxygen for 72 hours, the expression of autophagy-related gene autophagy-related proteins LC3/Beclin-1 was detected by reverse transcription-polymerase chain reaction, and Western blot, cell proliferation box (Cell Counting Kit-8) and apoptosis-related gene (Caspase) were detected by immunohistochemistry.

Results: The results showed that autophagy of pulmonary artery smooth muscle cells reduced apoptosis and increased proliferation to a certain extent under hypoxic conditions, and accelerated apoptosis with the increase of autophagy level. At 5% oxygen concentration, inhibiting autophagy of pulmonary artery smooth muscle cells can increase cell apoptosis, inhibit cell proliferation, and At 1% oxygen concentration, inhibiting autophagy of cells can reduce cell apoptosis, thus affecting cell proliferation and improving cell proliferation.

Conclusions: These results suggest that provide new clues and ideas for the prevention and treatment of hypoxic pulmonary hypertension, we can try to improve hypoxic pulmonary hypertension by affecting autophagy of pulmonary artery smooth muscle cells.

317 | Study on the mechanism of grape seed proanthocyanidins to decrease lipid and protect blood vessels

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Objectives: Hyperlipidemia is one of the major risk factors for cardiovascular and cerebrovascular diseases. Hyperlipidemia leads to excessive production of ROS in cells and oxidative stress in the body. CaMKII is a new target of ROS-mediated signaling pathway in vascular system, is an important regulator of vascular injury. Grape seed proanthocyanidins (GSP) have strong antioxidant properties and are a good scavenger of oxygen free radicals. This study investigated whether GSP can lower lipids, inhibit ROS production, and reduce Ca MKII protein Expression to protect blood vessels. The model of hyperlipidemia resulting from high fat die.

Methods: Biochemical method to detect serum levels of blood fats and nitric oxide (NO); Isometric tension changes of isolated arterial rings were recorded continuously by a myograph system; reactive oxygen species (ROS) generation were analyzed with fluorescent probe DCFH-DA.Ca MKII protein expression and activity was detected by Western blot.

Results: Compared with the sham group, the HF group had significantly higher body weight and blood lipid indices and worse mesenteric vascular function. High-dose GSP (150 mg/kg) improved the body weight and decreased the serum TG, TC, LDL-C and HDL-C levels of the HF rats. Moreover, GSP significantly reduced the vascular contractile response of phenylephrine and endothelin-1; enhanced the endothelium-dependent relaxation of acetylcholine. Compared with the HF group, the rats treated with GSP had significantly higher NO levels. Additionally, GSP reduced the content of ROS, decreased CaMKII protein expression in HF rat vascular tissue.

Conclusions: This study suggests that GSP likely exerts its protective effects in arteries by inhibiting ROS production and decreasing CaMKII activity and expression.

318 | Kinematics analysis of minimally invasive surgical robot with OpenCV coupled binocular vision irregular container

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Objectives: Surgical navigation system uses computer technology, stereo positioning technology and image

processing technology to enable surgeons to browse the three-dimensional anatomical structure of the lesion and the relative position and direction of surgical instruments and lesion sites in real time, to plan and guide the path of surgical instruments, to improve the accuracy of surgery and to improve the safety of surgery. Optical positioning subsystem is the key part of surgical navigation system, which directly affects the accuracy of surgical navigation system and the success or failure of surgery.

Methods: The objective of this study is to develop a low-cost and high-precision surgical navigation optical positioning system based on binocular vision. According to the purpose of this study, the key technologies and key problems of the surgical navigation optical positioning system are studied in depth, and the related experiments are carried out, and the preliminary results are obtained. The subsystem mainly uses the spatial position sensor to determine the spatial coordinates of the anatomical structure or external marker points in the surgical area and to track the relative position of surgical instruments and lesions in real time. Therefore, the research of related technologies in the three-dimensional positioning subsystem of surgical navigation has become one of the most advanced research fields. Because the active optical positioning system uses the luminous body mounted on the rigid body of the surgical instrument to determine its spatial position and motion by imaging with light sensitive elements, the positioning accuracy is high and the tracking process is stable. However, the cost of active positioning system is very expensive.

Results: The experimental results show that the method is not disturbed by the position and orientation of surgical instruments in the stereo matching process, and meets the working requirements of the system. Based on the research of the above key technologies, the projection matrix of the left and right cameras is calculated using the coordinate system of one of the cameras (left) in binocular vision as the world coordinate system, and the three-dimensional reconstruction of the feature points is carried out to obtain the spatial coordinates of the feature points, and the error analysis of the results is carried out. The experimental prototype system of the optical positioning system for surgical navigation is constructed in this paper. The results show that the system has low cost, fast and reliable implementation, the positioning accuracy basically meets the requirements of surgical navigation, and the anti-interference ability is strong.

Conclusions: Through the experimental integration of the improved camera calibration method, stereo matching and three-dimensional reconstruction, the calibration and three-dimensional reconstruction of binocular stereo vision system based on VC++ 6.0 and OpenCV are realized in Windows system. Experiments show that the system can restore the depth information of two-dimensional images and reconstruct the three-dimensional information of images.

319 | Study on the authenticity of patients' medical products perception by social media

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Objectives: The emergence of social media has also brought about the development of new technologies, which can help medical supplies marketers manage these interactions without staff strain. The automated response software of social media enables medical product marketers to standardize their responses to consumer reviews, and even create seemingly personalized responses by scanning the content of information dynamically or by geographic positioning. Whether these responses are from patients or pre-programmed procedures, this type of response tends to be one-way rather than two-way communication, which is consistent with the traditional quasi-social interaction. Just as other media use linguistic and non-linguistic information cues, information cues can be used to maintain a sense of two-way interaction between individuals and brands, thus forming quasi-social interaction.

Methods: By exploring the theoretical basis behind the patient-medical supplies relationship and the value of the relationship to the enterprise, this paper makes an empirical study on the patient-medical supplies relationship in social media. According to the literature on communication, quasi-social interaction theory is used to explain that brand success through social media is based on the close connection with consumers and quasi-social interaction, which provides a perspective on how to maintain intimate relationship based on automatic response. From the perspective of this theory, from the traditional quasi-socialized interactive environment to the social media, perceived interaction and communication openness have been tested. Similar to real interpersonal relationships, this paper assumes that quasi-social interaction can build positive interpersonal relationships, specifically increasing loyalty and willingness to provide information.

Results: The sense of quasi-social interaction was created through perceived interaction and openness in communication, which was positively correlated with patients' loyalty intention and the sense of willingness to provide information. These results further support the results of the study and confirm the feasibility of promoting quasi-social interaction through information cues. In terms of information cues, interactive perception can be driven by prompt response and directly based on user name response, which can further enhance the level of quasi-social interaction.

Furthermore, quasi-social interaction couples are nurtured through openness in communication, such as sharing similar personalized details and building a sense of one-to-one connection.

Conclusions: The experimental study only focused on a virtual brand of medical supplies; however, the results were the same as those of the real brand interaction on different social platforms in Study 1. Although most investigators report brand interactions on similar sites, a cross-platform survey may provide evidence for different cross-platform content.

320 | Infrared nondestructive testing of textile composites based on temperature field of defect surface

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Objectives: In modern industrial production, people pay more and more attention to quality assurance and quality control. Establishing a perfect quality assurance and quality control system within enterprises can not only reduce production costs and ensure product quality, but also save resources, reduce environmental pollution, protect the environment and achieve sustainable development of enterprises.

Methods: This paper is closely related to the development of chemometrics. Taking the wool content of textiles as the object of detection, a series of processes of wool component content detection by near-infrared spectroscopy were studied in depth, including the selection of detection conditions, the removal of abnormal samples and the establishment of regression model. According to the law of interaction between infrared and substances, the process of wool component content detection by near-infrared spectroscopy was discussed. This paper systematically expounds the application of infrared technology in textile industry, analyses the application principle and characteristics of infrared technology in various application fields, points out the problems existing in the application of infrared technology in textile field and its development direction, and looks forward to its application prospect. The analysis shows that the use of mid-infrared technology in textile industry will greatly reduce energy consumption and labor intensity, improve labor productivity and product

quality level, and is one of the important technical means to realize the transformation of textile industry to a low-carbon economy. Optical properties of textiles are an important part of their application properties.

Results: During the experiment, the samples need to be smashed, blended and pretreated, so we should explore a method that can directly detect textiles. This method can greatly improve the detection efficiency and scope of application, and expand the space for market popularization of research results. Some data processing methods in this study are implemented in Matlab 7.0, and there is no convenient handover in data processing engineering. Interactive interfaces, such as data processing methods into data processing software, will have greater value.

Conclusions: Data processing, elimination and regression of textile samples in this study provide a reference for rapid detection of textile components in actual production. It is convenient for on-line detection and can replace conventional chemical methods. It has the characteristics of fast and pollution-free. Due to the influence of various experimental conditions, many practical problems have not been involved, and there are still the following problems to be improved in this study. There will be a series of differences in raw materials from different regions, and the limitation of sample number will affect the stability of the model. We try to collect samples from different regions to improve the prediction accuracy and robustness of the model.

321 | Toward a simulation scheme for battlefield wound rescue training using biomedical materials

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Objectives: Timely and effective battlefield rescue is vital to the life support of soldiers. Traditional battlefield rescue means are difficult to meet the requirements of modern warfare for the increasing cure rate of battlefield injury treatment. Therefore, with the continuous advancement of modern biomedical engineering, biomedical materials have been more widely applied to battlefield injury rescue, which requires strengthening the battlefield injury rescue training that using biomedical materials.

Methods: In order to improve the training effect, a simulation scheme for battlefield injury rescue training which using biomedical materials is developed. The trainee can independently fulfill the battlefield injury rescue training based on the simulation project, and obtain a complete evaluation of the

rescue strategy, operation effect and the visualized healing effect. In this scheme, rescue strategy is a collection of rescue events which are identified by hidden Markov models (HMMs) models. Each rescue strategy is represented by a set of HMMs, each HMM modelling an individual type of rescue event. These HMM models are firstly trained using collected expert experience and historical cases and then carry out the healing effect evaluation of rescue events. It parameterizes the key simulation operation inputs to initiate the variability of the training scenarios and show the healing effect on the basis of visual processing unit.

Results: The accurate rate of 92% was achieved by the healing effect evaluation of rescue events. The rescue events can be evaluated and the healing effect can be visualized in a timely manner.

Conclusions: This simulation scheme is able to provide a good evaluation about the trainee's rescue strategy choice and operational level, visualize the healing effect, and improve the battlefield rescue training ability.

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322 | Total DNA extraction method of lacustrine sediment based on the bio-diversity research in Lake Yangzong, Southwestern China

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Background: To understand more clearly about the evolution and condition of environment, it is important to explore and analyze the processes and mechanism of lacustrine sediment which archived the environment changes. Meanwhile, the microorganisms inhabited in lake sediments server as an important role in the eco-environmental system. In addition, its role in bio-geochemical circulation is equally significant. With the further development of research methods and comprehension of the importance microbial biodiversity, the metagenome technology is widely used recent research. This paper describes the environmental DNA extraction method in our current research progress.

Methods: Sediment core samples were collected from the Lake Yangzong that is a deep-water plateau lake located in Southwestern China. Two sampling sites at high and lower total organic carbon contents point in different lake zones (H/LTOCP) were chosen. Sediment was collected using a gravity corer, and sediment was collected from the top 2 cm using disposable syringe for DNA sequencing. Samples collected in 20 mL cryotubes, and frozen in a liquid nitrogen filled vessel at $-80°C$. Once transported to the lab, samples were extracted immediately, and the remaining sediment (RS) again stored at $-80°C$ into the fridge until next nucleic acid extractions. RNA was extracted using the MoBio PowerSoil DNA Isolation kit, following the manufacturer's instructions. After extraction, DNA products were used in qPCR runs targeting the bacterial V5-V6 variable SSU rRNA region of the 16S rRNA gene, with forward primer V5F and reverse primer V6R. The amplicon targeting PCR reaction mix consisted of 1 mL DNA products $MgCl_2$ and Taq, 2.5 mL 10X buffer, 1 mL 0.5 mL DMSO, BSA, primer and dNTP, and add H_2O to a final volume of 25 mL. Products were purified using AMPure bead purification. The amplicon targeting (barcoding) PCR thermocycler profile consisted of an initial denaturation for 5 minutes at 94 (95)°C; 25 (7) cycles of 15 s at 94°C; 15 s at 55 (60)°C; and 30 s at 72°C; with a final extension for 1 minute at 72°C. Quality and concentrations of PCR products were analyzed on Agilent 2100 Bioanalyzer, diluting samples with the concentration of 100 ng/mL, and using Ion Torrent Genome Machine. Taxonomic analysis was using the MacQiime, and submitted sequences were assigned into OTUs picking at 97% similarity by open-reference.

Results: Ion torrent sequencing yielded 729,021 raw sequences from 4 samples (HTOCP, RS-HTOCP, LTOCP, RS-LTOCP), which was 542,011, 173,666, 8,483 and 4,861, and the OTUs number was 15,958, 10,130, 2,417 and 1,641 respectively. The Community analysis showed all the samples dominated by groups within *Proteobacteria* (20.8-26.7%), *Bacteroidetes* (5.5-7.6%), *Planctomycetes* (5.0-8.3%) and *Verrucomicrobia* (7.2-7.6%).

Conclusions: Although the cryopreserved at $-80°C$ could prevent degradation, the extraction should handle immediately. The OUTs number might be used as an indication of species diversity, but was inaccurate.

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323 | Problems and countermeasures of nursing major in private vocational colleges under the background of independent enrollment

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Objectives: Independent enrollment examination is a reform measure that enrollment colleges and universities independently carry out entrance tests, independently determine entrance standards, and independently implement enrollment. Each University in the United States has a high degree of autonomy in enrollment. American colleges and universities adopt a diversified enrollment system which is parallel to the "comprehensive selection system" and the "open enrollment system". Under the guidance of this degree, American colleges and universities' entrance examination methods, evaluation criteria and admission methods are self-contained and widely concerned and recognized by the international higher education community. In 2001, China began the pilot reform of the form of self-enrollment examination. By 2008, the number of pilot universities had expanded to 68. By 2012, the number of students enrolled in the independent examination of higher vocational education had reached 1.33 million, and in 2014, 3.18 million students were enrolled.

Methods: This study selected freshmen, sophomores and juniors from four private universities in Shaanxi Province, Xi'an Peihua University, Xi'an international University, Xijing University and Xi'an Fanyi University. 100 students of "Independent enrollment" and "general enrollment" were randomly selected from different majors and grades of each school. The observation group was "self-enrollment" and the control group was "General entrance examination enrollment". A randomized controlled study was conducted.

Results: The increasing number of multi-level students brings new challenges and problems to the talent cultivation in Higher Vocational colleges: 1) the source of higher vocational students is complex, and the overall quality of students is not high; 2) the students of different levels are arranged in the same professional class, which violates the law of students' learning cognition; 3) some students' learning objectives are not clear, and their learning enthusiasm is not high; 4) some students' learning ability. Lack of strength, rigid methods and skills, resulting in poor academic performance, and even a feeling of weariness.

Conclusions: We suggest, on the one hand, setting the minimum admission standard for nursing majors, enrolling students on this basis to ensure the quality of students, on the other hand, organizing the assessment of different classes, reasonably dividing classes according to the students' situation and teaching according to their aptitude, so as to avoid some students' Learning-weariness caused by poor grades and ensure the quality of teaching.

324 | Investigation and analysis on the status of mental health and social support of teachers in private colleges in Shaanxi Province

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Objectives: The aim of this study is to investigate the mental health status, social support status and the main influencing factors of teachers in private college, discuss the strategies of the improvement of private college teachers' mental health problems; to improve the construction of private college teachers in Shaanxi Province, and provides evidence for the decision-making of private colleges.

Methods: This study is a cross-sectional study, using probability proportional method to select respondents from four private universities in Shaanxi Province, the simple random sampling method has been used to select full-time teachers from these four universities. Using the self-designed general situation questionnaire, the Symptom Checklist 90 (SCL-90), Social Support Revalued Scale (SSRS), using EpiData3.0 to save, input and establish a database, using SPSS22.0 statistical to describe and analyze data, using t test, single factor analysis of variance, Pearson correlation analysis and statistical analysis, and unconditional Logistic regression analysis to explore the predictive effects of demographic variables and social support on mental health positive symptoms.

Results: 1) Private college teachers' mental health status in Shanxi Province are not good, the detection rate of psychological health problems was 48.98%, somatization, anxiety, and depression are prominent. Age, economy status, physical condition, exercise have significant effect on the total score of SCL-90. The status of social support is poor, marital status and economy status have significant effect on social support. 2) Social support level is correlated with teachers' mental health status. The higher the overall level of social support, the better the mental health status. 3) Family annual revenue is 200000 RMB or above, and have higher objective support, subjective support and utilization degree of support, the incidence of teachers' psychological unhealthy is low, divorce, intermediate title, short teaching experience (1-3 years) and teachers have poor self-reported physical condition will have high incidence of psychological unhealthy.

Conclusions: The mental health problems of private teachers in Shaanxi Province are prominent, especially the poor social support, divorce and pressure of promotion. Therefore,

relevant policies should be formulated to strengthen the social support of this group, so as to be more conducive to their mental health and better invest in the cause of education.

325 | Reform and practice of physical health teaching model for weak college students

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Objectives: Physical education teaching mode in Colleges and universities is to strengthen physical fitness, cultivate lifelong physical education ideas, and guide teenagers to strengthen physical exercise. It must be established under the guidance of certain physical education teaching ideas and theories. Without theoretical basis, it will become a castle in the air. This paper analyses the physical health of the weak college students in Capital University and establishes a teaching mode suitable to the physical health of the contemporary college students, in order to improve the physical weakness of the contemporary college students, and to contribute to the cultivation of high-quality talents with all-round development of morality, intelligence, physical fitness and beauty, and to change the traditional teaching mode.

Methods: This paper uses the methods of literature, questionnaire, statistical analysis and experiment to analyze the physical health of the weak college students. Through experiments, it establishes a teaching mode suitable for the physical health of contemporary college students, so as to improve the physical weakness of college students and the current situation that they are unable to participate in vigorous sports.

Results: Weak college students are a group that cannot be ignored. The era of knowledge economy has arrived, the amount of information has been increasing, and the speed of knowledge updating has been accelerated. Physical education teaching mode in Colleges and universities is to strengthen physical fitness, cultivate lifelong physical education ideas, and guide weak college students to strengthen physical exercise. It must be established under the guidance of advanced physical education teaching ideas and theories. Without theoretical basis, it will become. The castle in the air is an important medium in the teaching process.

Conclusions: Through physical education teaching, students' lifelong habit of physical exercise will be more solid, and students' enthusiasm for learning sports will be higher. College physical education teaching will certainly make greater contributions to the cultivation of high-quality talents with all-round development of morality, intelligence, physical fitness and beauty. At the same time, practice has proved that reforming the teaching process of physical education,

breaking down the single teaching mode and establishing various teaching modes are the key to accomplishing the tasks of physical education at the present stage, implementing the idea of lifelong physical education, and also the effective way and method to train qualified talents in the 21st century.

326 | Effect of psychological factors on physical health of college students

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Objectives: United Nations World Health Organization to "health" the appraisal includes: Health, psychologically healthy and society adaptiveness. This article mainly carries on the elaboration from university student's physique health and the psychologically healthy related significance, is for the purpose of from a new angle of view explanation healthy question importance, promotes us further to know to it, will provide the theory basis for the next physique health education as well as the psychologically healthy education, will guide the university student to the healthy question correct understanding, the improvement body and mind, the promotion health whole improvement to have certain guiding sense.

Methods: By using the methods of literature, questionnaire and mathematical statistics, this paper studies and analyses the relationship between College Students' physical health and psychological factors. The purpose is to understand the importance of psychological factors on College Students' physical health, to further improve college students' physical health, and to provide psychological theoretical basis and guidance for College Physical Education teaching.

Results: Young college students have their own personality and psychological characteristics, they do not have enough understanding of their own psychological problems. In the new environment of university, it is not conducive to the healthy development of students' physique. At the same time, schools and teachers do not pay enough attention to it. In the long run, it will cast a shadow on students' psychology, make them lose interest in sports activities, and will not actively participate in them. Sports, and then affect the development of physical health, resulting in physical and mental health problems of students.

Conclusions: Sports activities cannot be replaced by any other way or other means to promote the healthy development

of college students' psychology. Physical education teachers can guide college students to take part in physical exercises purposefully and correctly, and adopt various teaching methods and means to carry out physical education teaching, which can make students feel comfortable, form good personality, stable mood and optimistic attitude towards life.

327 | Effect of chorus on psychological health of college students

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Objectives: According to the documents of strengthening the psychological health in schooling, more and more attention has been paid to psychological health education. Taking chorus training as a means of psychological health education, this paper discusses the influence of chorus on the psychological health education of college students through the experience of artistic conception and beauty of the song during the training. The purpose is to construct a new approach to psychological health education of college students, which lead the students to set up the correct psychological health concept, to cultivate the national emotion and to inspire imagination and innovation. The paper will provide theoretical basis and guidance for college chorus training as a part of psychological health education.

Methods: By using the methods of literature, questionnaire and mathematical statistics, this paper studies and analyses the influencing factor of chorus training on the college students' psychological health education. Students fill in the questionnaire according to their self-feeling in five-paragraph evaluation. The survey covers participation enthusiasm, perception of beauty, sense of collective belonging, perception of self-worth and evaluation of chorus.

Results: The enthusiasm of college students to participate in chorus training is high. the artistic feeling given to students by chorus activities is vivid. The harmony experience brought by chorus, the appeal of the song and the comprehension of the connotation of the song give students a higher psychological health experience. The active participants in the scores are significantly higher than the passive participants. The difference in participation attitude is significant.

Conclusions: Chorus, as one of the important means of psychological health education, is an important way to cultivate students to discover, experience and deepen beauty. Chorus not only improves students' psychological health, but also cultivates students' collectivism spirit and self-perfection consciousness. The results show that the college students' sense of value is the same in terms of the experience of beauty given by chorus, the sense of belonging of the team, the perception of personal value of members, and the evaluation of chorus activities. The values of chorus for psychological health education in different teams are different, and the indexes of PE majors are higher than that of non-PE majors. The perception of each index of the active chorus activity group is higher than that of the passive participation chorus activity group, which fully shows that more and better results can be obtained only by actively participating in the choir activity group. The experiment and survey provide a certain reference basis for the cultivation of students' humanistic accomplishment in the future.

328 | Psychological pressure and consensus method of judgment documents reasoning

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Objectives: Many front-line case-handling personnels who deal with death penalty cases think conflicts between trials are severe, mental pressure of reasoning is great, and that they have no access to professional and standardized psychological counseling and correction. So what we are going to do is to find the source of specific pressure that case-handling personnel is facing and suitable methods to alleviate the specific pressure by taking judgment documents of death penalty cases as a sample. In this way, we can help case-handling personnels dare and can give their reasoning.

Methods: Randomly interview 180 citizens who are 18 and more than 18 years old on the street. We made a questionnaire among national public security organs personnels and lawyers who have dealt with death penalty cases. At last, we distributed 650 questionnaires and got 627 valid questionnaires, among which 18.4% is judges, 22.5% is judge

assistants, 16.5% is prosecutors, 25.3% is prosecutors assistants, and 17.3% is lawyers.

Results: 85.75% interviewees who have chosen "pay high attention to death penalty cases and its causes" indicated that they are more interested in procedural issues and evidence reasoning. In death penalty cases, psychological pressure sources of public security organs personnels are performance appraisal, public accusation of criminal misjudged cases, entanglement of victims' relatives, and exclusion of illegal evidence. Corresponding selection rate are 95.5%, 88.6%, 80.5% and 66.7%.

Conclusions: In countries which retain death penalty, to curb the arbitrariness and abuse of power in criminal justice by substantive reasoning of death penalty, grasping methods of reasoning, such as jurisprudence, academics, sense, art and science is more important. For substantive and procedural opinions and disputes between the prosecution and the defense, we should refine substantive reasons of adopting it or not. And for pressure sources which are found in rationing problems, we should improve psychological crisis counseling service by combining the need of work position.

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329 | Individualized physical health promotion of college students based on the students' physical health standard

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Objective: In recent years, the physique of college students is in a declining state on the whole, and college students need a strong body as a carrier for their study and work. Therefore, school sports shoulders the mission of "enhancing the physique" and "promoting the health". In order to make the evaluation of students' physical health play a positive and correct guiding role in the school sports work, the ministry of education and the general administration of sport of China have developed the "students' physical health standard". As an educational means to promote the healthy development of students and encourage students to take active physical exercise, "standard" is the individual evaluation standard of students' physical health and one of the basic conditions for students to graduate. Therefore, on the basis of "standard", development Individualized sports guidance program for students with

different levels of physical health can constantly correct and change the students physical health problems.

Methods: The methods of literature review, expert interview, experiment, observation and questionnaire survey were used. This study selected 200 non-professional sports level students. Male and female randomly divided into individualized physical health promotion group (experimental group, n = 100) and regular physical education group (the control group, n = 100). The 2017-2018 academic year physical fitness test scores of 100 students in the experimental group were graded (body composition, cardiopulmonary circulatory system function, muscle strength and flexibility were graded as good, medium and poor respectively). According to the grading results of physical health level, the experimental group was assigned to individualized physical health promotion courses with different exercise frequency, intensity, time, nature and schedule, while the control group still chose regular PE courses. The sports curriculum of individualized health promotion is made according to the opinions of sports physiology and sports training experts. After 16 weeks, the above indicators of the two groups of students were measured again. This paper analyzed the situation of the individualized physical health promotion course to the students' physical improvement and the students' attitude to the course.

Results: Compared with regular PE courses, students who participated in individualized physical health promotion courses not only improved their physical quality greatly, but also achieved significant learning effects in sports skills. Students' satisfaction with individualized physical health promotion curriculum is also higher.

Conclusions: The implementation of individualized physical health promotion plan for college students is conducive to promoting students' active participation in physical exercise and making students high-quality talents with correct sports awareness and healthy lifestyle.

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330 | Study on injury prevention methods in sports training

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Objectives: The traditional theory and method of prevention and treatment of injury cannot meet the development requirements of modern sports training. Physical therapy and

functional training are different from traditional sports medicine, and they treat athletes as an organic whole. After defining the injury or pain location of athletes, we can find out the specific causes of athletes' pain, and design corresponding functional training combined with the factors causing pain, so as to further achieve the treatment objectives.

Methods: The control group athletes mainly use routine treatment methods and training methods, while the observation group athletes take physical therapy and functional training, and summarize the treatment methods and functional training. The specific causes of athletes' pain were screened by using action mode, and the problems of joint and bone movement mode connected with pain points were analyzed. Reasonable evaluation of muscle strength and length is carried out, and the muscle movement ability linked to pain points is carefully identified. Finally, we should fully understand the structure of the joint, check the integrity of the joint and ligament, further effectively avoid bone injuries and better carry out rehabilitation training, analyze the causes of sports training injuries, and enhance strength on the basis of the overall recovery of sports training injuries. For long-term non-use of muscles, a set of relatively long-term, strong movements can be set up. Athletes can take full account of the movement mode to participate in training, so as to maintain long-term stability of muscles. At the same time, athletes can actively carry out the related training of pulling muscles and the corresponding training in the most accurate parts to avoid repeated injuries.

Results: By studying the effects of physical therapy and functional training on athletes' sports injury and rehabilitation training, this paper provides a theoretical basis for developing athletes' potential and tactics, and further promotes the healthy development of sports medicine.

Conclusions: The physical therapy and functional training for athletes' sports injury prevention and rehabilitation can achieve remarkable results. Physical therapy courses can be offered actively, and complex training can be implemented as soon as possible to enhance the overall strength of athletes and promote the sustainable development of sports undertakings.

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331 | Effect of Taekwondo exercise on physical fitness and mental health

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Objectives: To improve people's physical quality, enhance people's moral quality and develop lifelong learning and physical exercise ideas, Taekwondo sports will be included in sports through continuous understanding of Taekwondo knowledge.

Methods: As a more comprehensive sport, Taekwondo exercises need to activate the muscles and joints of the whole body. Connected according to scientific principles, Taekwondo is an integral combination of hands, feet and all parts of the whole body. Through the practice of Taekwondo, it can be seen that Taekwondo is not only an aggressive sport, but also an exquisite body art and an effective method of fitness and weight loss.

Results: Practicing Taekwondo can not only strengthen the body, but also cultivate self-cultivation, as well as the aesthetic sense of competition. In the process of training, it promotes the metabolism of human beings and improves their coordination and flexibility. Taekwondo is mostly composed of legs. Through practice, it can make the buttocks, thighs, and calf muscles firm and tense, and has a very good correction effect on sagging buttocks and soft knee joint. Taekwondo is fast and powerful, which can improve the coordination between the various cortical centers and between the cortical central and lower centers, improve the transformation process of excitation and inhibition of the nervous system, and promote the development of balance and flexibility of the nervous process. Long-term adherence to Taekwondo exercises can improve the blood supply of bone, the morphological structure and performance of bone, thicken the bone density, and make the bone stronger and stronger, which improves compression and torsion resistance of bone, as well as the stability of joints and the flexibility of human joints.

Conclusions: Because Taekwondo emphasizes antagonism and fierceness, it can help people build up their bodies, improve the movement function of people's body organs, and enhance people's movement flexibility. In addition, the sports spirit of Taekwondo can cultivate people's stubborn and brave, tenacious excellent quality, improve people's ideological and moral quality, so Taekwondo has become the main means of physical exercise, and has been promoted and popularized to a greater extent.

332 | The dynamic matching process of college students' employment mentality, behavior, capability and employment environment based on CAS theory

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Background: Due to the influence of emerging technologies such as the Internet, the micro-era, and self-media, the external environment faced by college students' employment has undergone tremendous changes. This complicated

environment has directly led to changes in the employment behavior and psychology of Chinese college students. In this context, facing the severe employment situation, actively guiding the change of college students' employment mentality and improving their employment ability have become an urgent sociological problem to be solved in China

Objectives: The objective of this study is to explore and analyze the dynamic matching process of college students' employment mentality, behavior, ability and employment environment.

Methods: Based on the complex adaptive system (CAS) theory and competence theory, this paper builds a measurement model of the dynamic matching process of college students' employment mentality, behavior, capability and employment environment. The principal component analysis and structural equation model analysis are used to assess the measurement model.

Results: Results show that the college students' employment mentality, behavior, capability and the needs of the employers exist differences, and there is a certain deviation between the cultivation mode of college students and the demand of the society.

Conclusions: The cultivation, promotion and guidance of college students' employment capability are all dynamic processes, and their mentality and capability directly affect their employment behavior. In order to achieve high-quality employment, through the construction of multi-dimensional interaction and adaptive model of employment capability, this paper proposes a CAS-based employment capability training system and guidance path of employment mentality, which provides reference suggestions for improving the quality of employment.

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333 | The effect of institutional investors on corporate social responsibility information disclosure: Evidence from China's pharmaceutical industry

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Objectives: The aim of the paper is to explore the effect of institutional investor holdings on corporate social responsibility. In recent years, China's medical product safety accidents have emerged in an endless stream, causing widespread public concern about the social responsibility of pharmaceutical companies. As an important external supervision subject in corporate governance, institutional investors play a key role in promoting the social responsibility of pharmaceutical enterprises. Therefore, the study of the effect of institutional investors' shareholding on corporate social responsibility is crucial. Here, we focus on the effect of institutional investors' shareholding on social responsibility under different equity concentration levels and then provide theoretical advice for enterprises to improve their shareholding structure and strengthen social responsibility.

Methods: This paper takes the pharmaceutical manufacturing listed companies that got 2010-2016 years' rating of the RSK as a sample. We exclude ST samples and eliminate samples with incomplete data, resulting in a total of 224 samples. The data in this paper is short-panel data (N>T). The IPS test is selected to perform the unit root test. The results show that the IPS test of all variables rejects the null hypothesis and is the same-order single-round variable. We further select the KAO test to perform the co-integration test. The test results show that the P value is 0, rejecting the null hypothesis, indicating that there is a stable relationship between the variables through the co-integration test. All models in the text reject the F test, so the mixed model should not be used. Further, all the models in the paper reject the Hausman test, and the P value is 0. Therefore, the fixed effect model should be selected for regression.

Results: The empirical research results of the effect of institutional investors' shareholding on corporate social responsibility show that the institutional investor shareholding ratio (IO) has a coefficient of 8.600, which is significantly positively correlated with the Social Responsibility Development Index (CSR) at 5%. In the case of low equity concentration, the institutional investor shareholding ratio (IO) has a coefficient of 11.334, which is significantly positively correlated with the social responsibility development index (CSR) at 5%. However, in the case of high concentration of equity, the coefficient of institutional investors' shareholding ratio is 7.370, and the level of significance of social responsibility is also reduced ($P > 0.1$), reflecting the negative impact of institutional investors on corporate social responsibility.

Conclusions: The results imply that the overall level of social responsibility information disclosure of Chinese pharmaceutical enterprises is not high, but there is a trend of improvement. In terms of social responsibility performance, institutional investors' shareholdings can have a significant positive impact. Moreover, compared with companies with higher equity concentration, institutional investors' shareholdings can play an active role in promoting corporate social

responsibility performance in companies with lower equity concentration.

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334 | Clinical observation of microwave ablation combined with TACE in the treatment of liver cancer

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Objectives: The purpose is to analyze the clinical efficacy of microwave ablation combined with TACE in the treatment of liver cancer.
Methods: 64 patients with liver cancer admitted to our hospital from March 2014 to November 2016 were studied and analyzed. 64 patients were divided into the group for test and the group for regulation. The group for regulation was treated with TACE alone. The group for test was treated with TACE with microwave ablation. The therapeutic effect and prognostic effect of the two groups were compared.
Results: After three months of treatment, the effective rate of treatment in the group for test was 69%, and that in the group for regulation was 52%. The effective rate of the group for test exceeded significantly that of the group for regulation. There was a difference in the treatment effect for contrastive study. $P < 0.05$ indicated that it was statistically significant. After treatment, the 2-year survival rate of patients in the group for test exceeded the group for regulation, and the survival rate of the two groups was different. Meanwhile, the recurrence rate of patients in the group for test after treatment was below in the group for regulation. The prognosis comparison for the difference was significantly different.
Conclusions: Patients treated with TACE alone had fever, pain, vomiting and abnormal liver function, but their clinical symptoms improved significantly after symptomatic treatment. Liver cancer has a high incidence in China. It is a common malignant tumor disease in clinic. There is no specific treatment for liver cancer. Common treatment methods include surgical resection, interventional therapy, local therapy and targeted drug therapy. Different treatments have different therapeutic advantages. Microwave ablation combined with TACE for liver cancer patients can effectively improve the treatment effect, improve the recovery of liver function, promote the survival rate of patients after treatment, reduce the recurrence rate of patients, and promote the prognosis.
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335 | Application of family-centered nursing model in children's blood diseases

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Objectives: The purpose is to discuss the application of family-centered nursing model in children's blood diseases.
Methods: 80 children with blood diseases treated in our hospital from February 2016 to February 2018 were selected. There are two established groups for contrastive study referring to the sequence of admission. The children using the family-centered nursing model were taken as the experimental group, and the children using routine nursing services were taken as the control group.
Results: Through the clinical comparison of the infection rate of children, the group for test was below the group for regulation, and the difference was statistically significant ($P < 0.05$). In terms of the incidence of oral mucosal complications, the group for test was below the group for regulation, and the difference was statistically significant. In terms of the incidence of venous inflammation, the group for test was below the group for regulation, and the difference was statistically significant. In terms of nursing satisfaction rate, the group for test exceeded the group for regulation, and the difference was statistically significant. The physical function of the group for test exceeded that of the group for regulation, and the difference was statistically significant. The psychological function of the group for test exceeded that of the group for regulation, and the difference was statistically significant. The social function of the group for test exceeded that of the group for regulation, and the difference was statistically significant. The emotional function of the group for test exceeded that of the group for regulation, and the difference was statistically significant. The role function of the group for test exceeded that of the group for regulation, and the difference was statistically significant. In terms of life quality score, the group for test exceeded the group for regulation, and the difference was statistically significant.
Conclusions: The use of family-centered nursing model in children with blood diseases can reduce the incidence of infection and the incidence of oral mucosal complications, improve the quality of life in terms of physical function, the nursing satisfaction, psychological function, social function, emotional function, role function and so on and reduce the incidence of venous inflammation, which has important clinical value.
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336 | Study on the short-term efficacy and safety of bevacizumab combined with chemotherapy for platinum-sensitive recurrent ovarian cancer

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Objectives: The purpose is to analyze the efficacy and safety of bevacizumab combined with chemotherapy for platinum-sensitive recurrent ovarian cancer.

Methods: 68 patients with platinum-sensitive recurrent ovarian cancer from February 2017 to January 2018 in hospital were studied and analyzed. The method of random number table was proposed to study these cases in this paper, and 68 cases were classified as two groups on average. 34 cases were in the experimental group and 34 cases were in the control group. The patients treated with paclitaxel and carboplatin were taken as the group for regulation, while the patients treated with bevacizumab combined with paclitaxel and carboplatin were taken as the experimental group. Before chemotherapy, both groups of platinum-sensitive recurrent ovarian cancer patients were treated with dexamethasone and 5-hydroxytryptamine 3 antagonists, and anti-allergic and anti-emetic treatment were taken. The incidence of adverse reactions and clinical efficacy of 68 patients were analyzed.

Results: The clinical efficacy of patients was 91.18% (31/34) in the experimental group and 64.71% (22/34) in the group for regulation. By comparison, the group for test was superior, and the difference was statistically significant ($P < 0.05$) when the two groups were compared and counted. Two groups of platinum-sensitive recurrent ovarian cancer patients had alopecia, digestive tract symptoms, liver and kidney toxicity, peripheral neurotoxicity, myelosuppression and other adverse reactions. The patients in the experimental group had diarrhea and abdominal pain, while the control group had no diarrhea and abdominal pain. The incidence of adverse reactions in patients was 29.41% (10/34) in the experimental group and 35.29% (12/34) in the control group. For adverse reactions, the significant difference was found according to certain rules in the two groups for research and comparison, so the statistical significance is $P > 0.05$.

Conclusions: Bevacizumab combined with chemotherapy has remarkable clinical efficacy, and the patients have a high tolerance, which can be widely recommended in clinical practice.

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337 | Electrospun three-dimensional silk fibroin/L-polylactic acid nanofibers with potential for promoting wound healing

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Objectives: Electrospun nanofibers have been widely used in the biomedical field due to their superior performance in simulating the extracellular matrix in terms of structure, composition and mechanical properties. In this work, we aim to fabricate three-dimensional (3D) materials with layered nanofiber structures using biodegradable silk fibroin (SF) and L-polylactic acid (PLLA) by combining electrospinning with sodium borohydride foaming technology, which possesses potential to promote wound healing.

Methods: SF and PLLA were dissolved in hexafluoroisopropanol (HFIP) at 1:1 ratio to obtain 10% (w/v) solution which was electrospun through 22G metal nozzle at accelerating voltage 15 kV and flow rate 1.0 mL/h. The two-dimensional (2D) nanofibers treated with methanol were foamed in sodium borohydride solution, then freeze-dried to achieve 3D structure. The effect of sodium borohydride concentration and foaming time on thickness, porosity and water absorption were investigated. Mouse epidermal cells and embryonic fibroblasts were cultured on nanofibers to observe morphology. The 3D nanofibers seeded with cells for 24 h were embedded in tissue embedding medium, then frozen and cut into 15 μm thick sections to check the effectiveness for cell infiltration. The effect on wound healing was evaluated using a full-thickness wound mouse model.

Results: We have fabricated nanofibers with layered structure, where the thickness, porosity, and water absorption can be adjusted by changing the concentration of sodium borohydride solution and the foaming time. Both 3T3 and JB6 cells cultured on the nanofibers exhibited good morphology under scanning electron microscopy and confocal microscopy. Compared with 2D nanofibers, 3D structure had improved cell infiltration. Mouse experiments showed that applying the material to the wound had a positive effect on the reduction of wound area.

Conclusions: We use biodegradable SF and PLLA to electrospun nanofibers, which are expanded to 3D structure. The 3D nanofibers obtained with adjustable thickness, porosity and water absorption have good biocompatibility, improved cell infiltration and positive effect on wound healing, which possess potential in wound dressing.

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338 | A novel FPGA-based real-time 3D shape reconstruction system with potential applications in medical image processing and analysis

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Objectives: Reconstruction of 3D information is one of the very important procedures in medical image processing. Unlike traditional Depth From Defocus (DFD) approaches, the current state-of-the-art DFD scheme addressed by Hu and Haan can reconstruct 3D shape only from a single monocular defocus image, which has been widely used in image processing, computer vision, robot obstacle avoidance and many other fields due to its low computational complexity and simple implementation. However, the latency is a major issue to implement such a DFD methodology for real-time medical video processing and analysis. Luckily, FPGA is an ideal platform to accelerate the processing performance for real-time 3D shape reconstruction system.

Methods: The current state-of-the-art DFD technique has been adopted to reconstruct 3D model from a defocus medical image. The DFD algorithm achieves 3D shape recovery by inferring the degree of defocus of each region in the defocus input image. More precisely, we calculate the difference ratio between two signals after Gaussian blur with two different standard deviations, where the blur degree can be solved. In order to reduce design complexity on FPGA, Vivado High Level Synthesis (VHLS) is applied to design such a real-time system. The system architecture is first designed through C/C++ code that is further synthesized to the FPGA design by VHLS. Then, the PIPELINE directive is used to optimize the latency and the interval of the proposed real-time system.

Results and Conclusion: In this work, we propose a novel real-time 3D shape reconstruction system implemented on FPGA devices. The target FPGA device Xilinx XC7K420TIFFV901 is adopted in the proposed system and the clock period is set to 50 ns. Through the PIPELINE directive, the latency and interval decrease 40% and 59% respectively while resource utilization is still within the limit. We used a PULNIX TM-765 monochrome camera with a 50 mm manual lens to obtain defocus images. Our FPGA-based real-time system only takes 0.046s to process a 640 × 480 defocus image with the working frequency of 20 MHz, which also implies that we achieve a video-rate processing system at the speed of 22 frames per second. We demonstrate how to design DFD process on FPGA to reconstruct the 3D shapes from a single monocular defocus image. We hope that our work can further stimulate the new developments on FPGA designs for medical video processing and analysis.

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339 | Piper betle emulsion formed via ultrasonic emulsification method

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Background: *Piper betle* extracts and essential oils has been reported to have multi-functional biological effects including antimicrobial effects and anti-inflammatory activity. This study aims to produce oils in water emulsions from *Piper betle* extract using the ultrasonic emulsification method. In this study, *Piper betle* emulsion is formulated using *Piper betle* oil, Tween 80, and water by using 20 KHz probe-type ultrasonic processor. Ultrasonic emulsification of *Piper betle* oil, Tween 80 and water was carried out and the effect of different concentration of surfactants (2.5 % and 5%), various emulsification time (30, 60, 90 minutes) and energy density on the emulsion droplet size has been studied. From this study, the 20 KHz probe-type ultrasonic processor was successfully used for the preparation of oil in water *Piper betle* emulsion.

Methods: The dried *Piper betle* leaves was extracted by using probe-type ultrasonic processor (20 kHz, Q700, QSonica) for 15 minutes by setting amplitude at 70 %. The emulsions were prepared by mixing 1 g *Piper betle* oil, tween 80 with 200 ml distilled water using the probe type ultrasonic processor (20 kHz, Q700, QSonica) by setting amplitude at 100%. The emulsions contained 1 g *piper betle* oil and tween 80 with

ratios of 1:5 and 1:10 was sonicated for 30 minutes. After measure the droplets size, the ratio of 1:5 was repeated and sonicated for 60 and 90 minutes. The droplet size and polydispersity index (PDI) of the emulsion was measured using Zetasizer Nano-ZSP (Malvern, England).

Results: The dynamic light scattering measurement confirmed that the *Piper betle* extract from ultrasound extraction technique can be used to produce *Piper betle* emulsion with 250 nm droplets sizes in 30 min. PDI values more than 0.5 showed wide droplets size distribution. However, all emulsion samples demonstrated lower value than 0.5 and could be acceptable in this study. The energy density 997.2 J/ml was sufficient enough to produce a 250 nm droplets sizes in 30 min.

TABLE 1 Droplets size, PDI and Energy density of *Piper betle* emulsions

Piper betle extract: TWEEN 80 Ratio	Time (min)	Mean droplets size (nm)	Polydispersity index (PDI)	Energy density (J/ml)
1:10	30	327.0	0.516	997.2
1:5	30	250.0	0.482	997.2
1:5	60	266.0	0.397	1994.4
1:5	90	469.4	0.486	2991.6

Conclusions: A novel *Piper betle* emulsion stabilized by Tween 80 was successfully prepared by using 20 KHz probe-type ultrasonic processor. The 30 min of sonication time can form a *Piper betle* emulsion with mean droplet diameter about 250 nm. Low surfactant concentration was found to have a positive impact with droplet diameter in this study. The continuous increased of ultrasonic power and emulsification time give negative impacts on the emulsion stability but improved the PDI value of the *Piper betle* emulsion. The emulsion with droplets size from 50 nm to 500 nm is suitable for most of the industry application.

340 | Efficient memory design for medical database

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Objectives: It is preferable that the medical data are stored so as to classify characteristics such as similarity and difference between the large-capacity data at a high speed. Usually, a large amount of data is stored in a distributed database, and a similar or classified search is performed according to a user's request. A highly optimized memory structure must be provided for repeatedly performing such complex operations using medical data. When it use an effective memory structure, it can improve computational performance and power consumption.

Methods: Unlike general scientific data, medical data are not used locally, but has characteristics that are uniformly used throughout. Therefore, it is better to optimize the database structure first, and then to improve the memory structure, rather than optimizing the existing memory hierarchy.

A large number of databases basically use a distributed structure, and therefore, it is necessary to have the same structure of memory in order to use the database structure effectively. Databases and memory with different structures may not take advantage of the architecture and may cause performance degradation.

The distributed memory structure is preferably a high-speed memory of the same type. Providing different access speeds reduces the overall system speed. At this point, SSD type is preferred to main storage. Access speed is a very important consideration because it performs iteratively complex operations based on a large amount of data.

Results: To effectively manage large amounts of data, a distributed database is recommended. Distributed databases are available in a variety of computing environments, regardless of memory architecture. However, it is better to use a distributed memory architecture to effectively use distributed databases. When using a distributed database in a centralized memory structure, the performance may vary by up to 40% compared to a distributed memory structure.

If a database can be configured that fits into the main memory size, it is an optimal case, but because it is usually configured to a disk-based database system, it is important to understand the distributed memory architecture. Since the distributed structure layer can be formed according to the structure of the database, it can be configured in a complicated hierarchy, resulting in a difference in performance and power consumption. It needs to iteratively optimized data access pattern to design optimal memories.

Conclusions: The medical database can be classified into hierarchical structure, centralized structure, and decentralized structure. Select and configure the appropriate database according to the data usage pattern. When the memory system is efficiently configured, power and performance can be improved. It is important to construct a memory system with the same structure as the database.

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341 | The study of endotoxin and mycotoxin exposure for composting plants workers

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Objectives: The composting plant is a semi-open and restricted operating environment. The soil and waste were the major fermentation composition, and that were the sources of bacteria and fungi. Bacteria and fungi in the composting plant are distributed by operating, turning, and air ventilation. These operating procedures create biological pollution, including bioaerosols, mycotoxin and endotoxin that spread into the air and affect the health of workers. Therefore, this study goals to investigate the biological hazards in the composting plants. The concentration distribution of bacteria and fungi bioaerosols were measured in this work. And the endotoxin, and mycotoxin were also detected in the composting plants.

Methods: This work selected two kitchen-waste composting plants as the sampling sites. There are 5 sampling areas, including waste dumping area, pretreatment area, semi-finished product temporary storage area, semi-finished product dumping and packaging area, in each composting environment. An biostage sampler ((Biostage with Quick Take 30, SKC Inc., USA) was used for bioaerosols sampling. The biostage sampler was operated at flow rate 28.3 lpm for 15 seconds in each sampling. Trypticase Soy Agar (TSA) and malt extract agar (MEA) were used for bacteria and fungi culturing. Endotoxin, aflatoxin (AFB1、AFB2、AFG1、AFG2) and ochratoxin were chosen as the target biotoxins. Endotoxins of the total dusts were measured by Limulus Amebocyte Lysate test (LAL test). These mycotoxins of the total dusts were detected by enzyme-linked immunosorbent assay (ELISA). Total dusts sampling in composting plants is based on Taiwan Ministry of Labor's suggesting sampling method CLA4002.

Results: Results showed the bacteria and fungi bioaerosol concentrations are 118-6337 CFU/m^3 and 24-3298 CFU/m^3 in the two kitchen-waste composting plants. Endotoxin concentrations in the two kitchen-waste composting plants were 45-724 EU/m^3, and the highest concentration was found in the packing area; aflatoxin concentrations were 0.141-315.65 ng/m^3, and the highest concentration was also found in the packing area; Ochratoxin A concentrations were 0.076-163.14 ng/m^3, and the highest concentration was again found in the packing area.

Conclusions: The results indicate that bioaerosols, endotoxin and mycotoxins are high in the composting plants. The experimental data showed that turning of compost was the major factor to increase bioaerosol concentrations. Composting environment should increase ventilation to reduce bioaerosol and biotoxin concentrations

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342 | Study on the noninvasive and real-time detection method for viscoelasticity of skin tissue

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Objectives: At present, the detection device of skin tissue mechanical properties at home mainly describes the external characteristics of skin qualitatively, and the devices which can measure the skin mechanical properties quantitatively are mainly concentrated on professional medical institutions such as beauty parlors and hospitals. Moreover, these devices are larger and more expensive, which are not suitable for daily use in families. In order to solve this problem, a noninvasive and real-time detection system is developed, and its application was studied.

Methods: Based on the theory of dynamic micro-indentation method, a new proposal of skin viscoelasticity detection was proposed. A single-degree-of-freedom forced vibration model was used, and a forced vibration system between sensing head and skin tissue was constructed (Fig. 1). The elastic coefficient k and the viscosity coefficient c of the tissue were estimated from the relationship between the frequency, the amplitude, and the phase difference of the displacement and force by adding the sinusoidal wave micro-vibration to the tissue. In order to ensure that the detected tissue properties are indeed the one of dermis, the optimal input frequency, the optimal vibration amplitude and the optimal indentation depth of the system are discussed in this stud. Twenty skin healthy subjects participated in the experiment. The skin viscoelasticity detections were performed in different parts of the body, including the inside and outside of the upper arm, the forehead and the lateral thigh.

Results: Firstly, the preparation experiments were carried out using sponge material 33A and pigskin tissue, and the accuracy and stability of the system was verified. Secondly, the experiments on different parts of human body were carried out. The experimental results showed that the viscosity coefficient of skin was small and its changes with age were also small; however, the changes of the elastic coefficient were big with
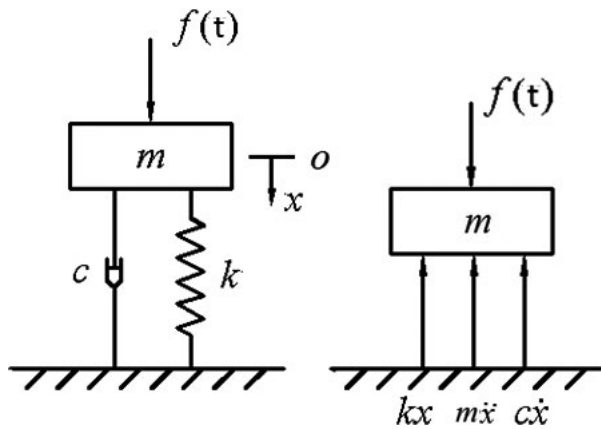
Figure 1. Forced vibration system model

age. The average skin elasticity of arm keeping straightening was significantly higher than that of natural bending; the elasticity of the inner skin of the arm was decreased linearly with age. The elasticity of the forehead skin was generally higher than the other three parts, but it was also the most irregular response to age changes; the elasticity of the calf perpendicular to the tibia axis showed almost no change with age, so that it had the stable biomechanical properties.

Conclusions: The new skin viscoelasticity detection method proposed in this study can measure the skin tissue properties, and the validity of the system is verified. Moreover, the relationships between skin viscoelasticity and different parts of the body, and between skin viscoelasticity and age have also been preliminarily confirmed.

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343 | A novel genetic algorithm for the vehicle routing problem

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Background: The vehicle routing problem (VRP) is a well-formulated multi-objective optimization research issue. It has significant impacts in logistics and operational research. The cost-efficient solutions for VRP can benefit not only environmental economics and social science but also significantly reduce the traffic congestion as well as environmental pollution. Therefore, an advanced solution for VRP is very necessary and crucial.

Methods: In this work, we design and analysis of a novel external archive guided multi-objective evolutionary algorithm called EAG-MOEA/D to achieve an extended version of the traditional VRP with given time windows called VRPTW, in which a homogeneous fleet of capacitated vehicles will be scheduled to serve a set of given customers within specified time intervals. The main objective is to minimize the number of vehicles in the fleet and the total travel distances simultaneously. Combining with our new machine learning-based local search methodologies, Timing Pool Local Search (TPLS), we show that our novel genetics-based machine learning approach EAG-MOEA/D-TPLS derives more nondominated solutions and has better performance than the current state-of-the-art algorithms in the literature. Our new genetic algorithm is illustrated as follows.

Input: 1) a benchmark of VRPTW; 2) a stopping criterion; 3) N: the number of sub-problems; the population size of P and A; 4) $\lambda^1, \ldots, \lambda^N$: a set of N weight vectors; 5) T: the size of the neighborhood of each sub-problem

Output: a set of non-dominated solutions A

Step 1: Initialization: 1) Modify the MOP into N sub-problems associated with $\lambda^1, \ldots, \lambda^N$. 2) Generate an initial population $P = \{x^1, \ldots, x^N\}$ through heuristic method. 3) Set A = P. 4) Calculate the similarity between any two individuals and derive the T closest neighborhood of each sub-problem. For each $i = 1, \ldots, N$, set $B(i) = \{i_1, \ldots, i_t\}$ where $x^{i_1}, \ldots, x^{i_T}$ are the T closest neighborhood of x^i

Step 2: Derivation of new solutions: For all $j \in \{1, \ldots, N\}$ do 1) Choose sub-problem i to search. 2) Randomly pick up two indexes k and l from $B(i)$. 3) Apply genetic approaches on x^k and x^l to derive y_j for each individual sub-problem i. 4) Apply the Timing Pool Local Search to y_j. **End for**

Step 3: Update for the populations: For all $j \in \{1, \ldots, N\}$ do 1) If y_j is achieved from sub-problem i, for each index $k \in B(i)$, set $x_k = y_j$ if $g^{te}(y_j|\lambda^k) \leq g^{te}(x_k|\lambda^k)$. **End for**
2) Combine Y and A to derive $Z = A \cup Y$; choose N best solutions from the combined population Z by the NSGA-II selection to update the A

Step 4: Stopping criteria: If the conditions hold, the algorithm will stop the execution and output A. Otherwise, go to Step 2.

Results and Conclusion: The experimental results are implemented in MATLAB on an Intel(R) Core(TM) i5-3470 CPU, 3.2 GHz. The experimental results demonstrate that our novel approach outperformed than the MOEA/D approach at 56 Solomon instances. The effectiveness and superiority of TPLS is demonstrated by a better performance in both the convergence time and the diversity for all tested problems.

Particularly, when the average difference of time windows is high and the variance of time windows is low, TPLS has even better performances. For the categories C1 and C2, EAG-MOEA/D-TPLS achieved similar results as the previously best-known solutions, but it found the solutions with a lower travel distance than all of them. The solutions from the hybrid GA achieved the lowest travel distances for categories R1, R2, RC1 and RC2, where the results from EAGMOEA/D-TPLS are 2.03%, 3.96%, 2.45%, and 5.37% slightly higher, respectively. However, EAG-MOEA/D-TPLS derived the smaller number of routes. Moreover, the experimental results present the full details of the number of vehicle and the travel cost or distance for the solutions in the Pareto approximations obtained by our EAG-MOEA/D-TPLS for the 29 instances. We also observed that the TPLS has a huge advantage in *2 type instances with stable time windows.

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344 | Research on the regulation elements of technical service quality, functional service quality and satisfaction from the perspective of relationship norms and service types

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Objectives: The service delivery process consists of four kinds of participation elements, namely, employees, customers, service itself and interaction process. In the existing domestic and foreign literature, the research on the attributes of employees or customers is more abundant, but there is less attention to service elements and interactive elements; there is more literature to explore the quality of service to the main effect of satisfaction. A small amount of literature begins with the dimension of service quality, and the influence of technical service quality and functional service quality on satisfaction is explored, but the research on regulatory elements and boundary conditions is scarce. Explore the impact and regulation of customer-employee relationship norms (interactive elements) and service types (elements of service) on the relationship between service quality and satisfaction on the basis of existing research.

Based on the perspective of customer-employee relationship and interaction, the relationships between relationship norms and technical service quality, functional service quality and satisfaction are explored. Based on the perspective of service nature, the adjustment function and effect of service types on the relationship between technical service quality, functional service quality and satisfaction are analyzed.

Methods: 1. Method one: Regulatory effects of relationship norms:

1.1 Experimental objectives

Firstly, to explore the main effect of technical service quality and functional service quality on satisfaction; Secondly, to explore the moderating effect of relationship norms between on technical service quality and satisfaction; Thirdly, to analyze the moderating effect of relationship norms between on functional service quality and satisfaction.

1.2 Hypothesis test

On the basis of variance analysis, the hypothesis H1 is verified, the variable is "satisfaction", the independent variable is "technical service quality (high and low group)", "functional service quality (high and low group)" and relationship norms (symbiotic norm and exchange norm), and the independent variables are classified variables.

We verify hypothesis H1a and hypothesis H1b by constructing technical service quality (high and low)*relationship norms (symbiotic, exchange) matrix and functional service quality (high and low)*relationship norms (symbiotic, exchange) matrix.

(1) The main effect analysis of technical service quality and functional service quality. The analysis of the single variable main effect shows that the quality of technical service is positively affecting the level of consumer satisfaction ($F(1112) = 32.420$, $P < 0.01$), and the quality of functional services is improving the satisfaction of consumers ($F(1112) = 40.231$, $P < 0.01$).

(2) Interaction of quality of technical services*relationship norms. The interaction results shows that there is interaction between technical service quality (high and low) and relationship norms ($F(1112) = 38.794$, $P < 0.001$).

When the symbiotic relationship is initiated, the groups with higher quality of technical services and lower groups shows no significant difference on the level of satisfaction ($F(1112) = 2.911$, $P = 0.12$). When the exchange relationship is started, the groups with higher quality of technical services and lower groups are significantly different at the level of satisfaction ($F(1112) = 88.442$, $P < 0.001$).

(3) Interaction of functional quality of service* relationship norms. We divide the functional service quality into high group and low group through the median. Interaction analysis shows that there is a significant interaction between functional service quality (high and low) and relationship norms ($F(1112) = 42.224$, $P < 0.001$). There is no significant difference in the level of satisfaction between the high and low functional service groups ($F(1112) = 1.116$, $P = 0.34$).

When the standard of consumer symbiotic relationship is started, consumption is more important for emotional, interaction and communication elements, which leads to high and low groups of functional service quality, and

there are significant differences in the level of satisfaction $(F(1112) = 67.231, P < 0.001)$.

2. Method two: The adjustment effect of service types:

2.1 Experimental objectives

First, verifying the effect of functional service quality and technical service quality on satisfaction again. Second, exploring and analyzing the moderating effect of search service on service quality between different dimensions and satisfaction. Thirdly, analyzing the moderating effect of trust service on service quality and satisfaction.

2.2 Hypothesis test

Using variance analysis to verify and assume H2, the dependent variable is "satisfaction", and the independent variable is technical service quality(high and low group), functional service quality(high and low group) and service type(search service and trust service), the independent variable is all categorical variable. By establish technical service quality(high、low)*service type(search、trust) matrix、functional service quality(high、low)*type of service(search、trust) matrix to verify and assume H2a, H2b should be assumed too.

Firstly, the main effect analysis of technique service quality and functional service quality. The analysis of variance indicates that technique service quality $(F(1,121) = 35.211, P < 0.01)$ and functional service quality can all promote the satisfaction of consumers positively.

Secondly, the reciprocal action of technique service quality*service type. The reciprocal action Indicates, technique service quality(high、low) and service type(search, trust) have a significant interaction effect$(F(1,121) = 44.774, P < 0.001$. Which leads to the background of trust service, the technique service of high-quality group and low group, on the level of satisfaction doesn't have significant difference $(F(1,121) = 1.232, P = 0.18)$. But as background of search service, these two groups have significant difference $(F(1,121) = 58.172, P < 0.001)$.

Thirdly, the reciprocal action of technique service*service type. The reciprocal action indicates, functional service quality(high、low) and service type(search, experience) have a significant interaction effect $(F(1,121) = 38.771, P < 0.001)$. By the background of search service, the satisfaction level between high group and low group doesn't have significant difference $(F(1,121) = 0.998, P = 0.53$. But on the background of trust service, the functional service between high and low group, have a significant difference in satisfaction level $(1,121) = 63.224, P < 0.001)$.

Results: 1. Service quality is not a single dimension; the data shows that the quality of service processes and the quality of service results will positively significantly increase consumer satisfaction levels.

2. The regulatory effect of relationship norms. Relationship norm regulates technical service Quality, functional service quality and satisfaction.

3. The customer and employees showed intimacy and altruistic orientation and were sensitive to functional service quality. When the exchange Relational Norms was initiated, the customer and employees were presented with economic relations, transaction relationships, and merchant relations. Pay more attention to the exchange of interest and reciprocity norms. In this context, consumers are more sensitive to the quality of technical services, which leads to the exchange relationship specification will strengthen the relationship between technical service quality and satisfaction.

4. Regulatory effects of service types. Different types of services mean that consumers have significant differences in product knowledge, experience, and access to information, which leads to differences in consumer sensitivity.

5. In the context of search service type, consumers have the ability to evaluate products and services, and are more sensitive to the quality of technical services. Under the background of trust services, consumers rely more on service processes, employee communication, and interaction to judge the quality of services, and on functional services. The quality is more sensitive.

Conclusions: First, managers should ensure service results and performance, while need to pay attention to the interaction, communication and communication status between customers and employees, so as to improve satisfaction and loyalty of customer.

Second, according to different customer types, employee relations management practitioners can focus on strengthening different service elements. Exchange relationship specifications. The enterprise shall guarantee the results, performance and expectation of the service of the service; symbiotic relationship norms, employees should interact and communicate with customers proactively.

Third, according to different type of service, the key point of enterprises needs to adjust the service. For trust services, enterprises should improve the level of satisfaction of customer through service processes. For search service, enterprises should ensure the quality of service performance and results, to win satisfaction and loyalty of customers.

345 | Gastric magnetic resonance T_2 imaging by polydopamine functionalized co-based nanocomposite

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Background: Gastric diseases, such as gastritis, gastric ulcer, gastric cancer and gastric stromal tumors represented a wide variety of conditions, which affecting anatomy, physiology,

and motility of the stomach. Magnetic resonance imaging (MRI) can provide diagnostic information to the stomach. Therefore, we developed polydopamine conjugated (PDA) Co-P nanocomposites for gastric MR imaging.

Methods: We have successfully constructed polydopamine conjugated (PDA) Co-P nanocomposites (Co-P@PDA). XRD was applied to measure the crystalline structures of nanoprobes. FT-IR was applied to measure the conjugated PAA. MTT test was applied to measure the in vitro cytotoxicity of nanomaterials. Hematoxylin and eosin (H&E) staining was used to measure the In vivo cytotoxicity of nanomaterials. Kunming mice and Wister rats were obtained from Jilin University. MR imaging evaluation was carried out on a clinical GE Discovery MR750.

Results: From the results of the transmission electron microscope, the prepared Co-P@PDA owned uniform morphology and monodispersed. From the results of the XPS spectrum, the feature from the peak of N 1s further proved the successful conjugating PDA on Co-P nanocomposites. The HAADF-STEM (high angle annular dark field scanning transmission electron microscopy) showed that homogeneous distribution of N and C elements on the Co-P, which indicated the core-shell structure. The r_2 value (transverse relaxivity) was measured to be 224.61 mm/s, which is higher than commercial agents, such as Combidex or Feridex. From results of MTT, after 24 h of incubation with Co-P@PDA, viability of cell exceeded 80%, which indicated low cytotoxicity. The results of H&E-stained organ sections also indicated low cytotoxicity. From the results of in vivo gastric MR imaging acquired through 3.0 T MRI scanner, an obvious darkening signal of the stomach can be showed.

Conclusions: Above all, PDA conjugated Co-P nanomaterials were constructed and served as contrast agents for gastric MR T_2 imaging. The results from gastric MR T_2 imaging proved that the nanocomposites showed better contrast effect than commercial agents. With low side effects, PDA conjugated Co-P nanomaterials could be a promising contrast agent for gastric MR T_2 imaging.

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346 | The analysis of Tibetan high school students' physical health differences and influencing factors at various altitudes in Tibet

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Objectives: Analyzing the physical health data of Tibetan high school students on various altitudes, the paper aimed at revealing the characteristics of physical health among those students and multiple comparatively analyzing the differences existing in physical health of Tibetan students at different altitudes. In addition, the article tried to put forward the proposal of improving students' physical health situation based on the analysis.

Methods: The article used the methods as literature, interview, field survey, test and mathematical statistics. We designed to use the main method of test. There were 710 students (male 353, female 357) randomly sampled from high altitude, 686 (male 327, female 359) from middle altitude and 819 (male 391, female 428) from low altitude. These students conducted the test including height, weight, vital capacity, sit-up/pull-up, standing long jump, 50-meter dash, 1000-meter/1000meter, sit-and-reach.

Results: 1. The natural environment had different effects on various physical health indicators of Tibetan boys and girls. For boys, there was a liner relationship between the altitude factor and their weight, vital capacity, sit-and-reach level and 1000-meter result; while for girls, there was no obvious relationship between the altitude factor and their weight, sit-and-reach, 50-meter dash and 800-meter result. 2. Since the Tibetan high school students in middle and high altitude regions were short and thin of stature, their vital capacity, endurance quality, velocity quality and flexibility quality were worse than those of Han students in the same age. The physical health of Tibetan high school students in low-altitude regions was better than that of Han students of the same age. 3. The physical fitness of Tibetan high school students in low-altitude regions was better than that of Tibetan high school students in middle and high altitude regions. 4. The physical health of Tibetan high school students at different altitudes in Tibet was affected by various factors such as the natural environment, eating habits, school sports, and family.

Conclusions: 1. The altitude factor had a great impact on the physical health of Tibetan boys, while the impact on the health of Tibetan girls was not obvious. 2. There were differences in the physical health of students from different altitudes in Tibet. Students in low-altitude areas had better physical health.

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347 | Preparation of PEI-conjugated Ba-based nanoprobes for gastric CT imaging

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Background: A variety of diseases of stomach, such as gastritis, gastric ulcer, gastric cancer and gastric stromal tumors could be diagnosed with gastroscopy. However, gastroscopy is an invasive examination. Multi-detector computed tomography (CT) provides new techniques for imaging of gastric organs. Besides axial CT imaging, if the collimation is performed, 3-dimensional visualization and multi-planar reformation can be achieved with high quality. As an organ of gastrointestinal tract, a positive or negative contrast agent is needed for evaluating the stomach. At present, suspension of barium sulphate is the first choice as positive negative contrast agent. However, because of the imaging high density of barium sulphate and high resolution of CT imaging, artifact produced by the barium sulphate can affect accurate diagnosis. Therefore, we developed PEI-conjugated Ba-based nanoprobes for In Vivo gastric CT imaging.

Methods: We have successfully constructed Polyetherimide (PEI) conjugated $BaGdF_5$ through a microwave-assisted polyol process. TEM was used to characterize the shape of nanoprobes. XRD was used to characterize the crystalline structures of nanoprobes. FT-IR was used to characterize the conjugated PEI. MTT test was used to characterize the In vitro cytotoxicity of nanoprobes. Hematoxylin and eosin (H&E) staining was used to characterize the In vivo cytotoxicity of nanoprobes. Philips iCT was used to characterize the CT imaging of nanoprobes. Kunming mice and Wister rats were obtained from Jilin University (Laboratory Animal Center).

Results: TEM images showed a mean diameter of 30 nm of the nanoprobes with spherical character, the nanoprobes had a smooth surface. XRD results showed both intensity and peak position matched with $BaGdF_5$ crystals. FT-IR spectroscopy showed the coating of PEI on $BaGdF_5$ nanoprobes. MTT assay indicated remarkable low cytotoxicity of the nanoprobes. H&E staining confirmed the no damaged results of long-term toxicity. CT imaging results showed the excellent structure and shape of the stomach, especially with 3 D CT imaging.

Conclusions: In summary, we successfully synthesized PEI conjugated $BaGdF_5$. The In vitro gastric CT imaging and In vivo gastric CT imaging results confirmed that the nanoprobes owned excellent CT imaging features, and the results of our research indicated the potential gastric CT applications in further.

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348 | Risk identification and assessment on teaching of physical education

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Objectives: Recent years, physical education class has become the important part of school activities, but the risk event that constantly occurs in the class threat the school education safety security. In order to prevent the tragedy, happen, how to establish a perfect school physical education risk management system has become an urgent problem to be solved. So far, the existing literature on the risk management of physical education in primary and secondary schools is relatively rare. Based on the risk management theory and its framework, this study takes the risk identification, assessment and response of physical education in primary and secondary schools as the research object, taking 24 primary and secondary schools as the survey object, this paper deeply investigates the risk factors of physical education in primary and secondary schools, analyzes the causes of the occurrence. On the basis of this,building schools physical education index system and determine the risk level of each index, this provides a scientific method, theoretical and practical basis in primary and middle schools.

Methods: The paper initially forms the preliminary check table of risking factors using case analysis method and questionnaire method to find out the potential risks in sports, evaluates the risk rate of every risking factors in school using Delphi method and Pareto analysis method, and makes the final risk checklist and the priority levels of risk factors using risk graph method seeking for risk-coping strategies.

Results: 1 The construction of risk management system and framework for physical education in primary and secondary schools. Based on the actual state of physical education

in primary and secondary schools, consulting the risk management theory, constructing the management system and framework. The study believes that the risk management system for physical education in primary and secondary schools should be based on the development of risk management plans, through risk identification and risk factor probability, its qualitative and quantitative assessment, formed risk response and prevention plan, to clear measures, put into practice, supervise the whole plan, get feedback and adjust it.

2. Construction of risk index system for physical education in primary and secondary schools. Based on the accident causation theory, through literature review, case analysis, questionnaire survey and expert interviews, initial screen the risk indicators of physical education in primary and secondary schools; by the Delphi Method, the risk index system of physical education in primary and secondary schools was finally constructed. The research has formed a risk index system for school physical education in primary and secondary schools including 5 categories and 43 risk factors. The 5 categories are personnel risk, management risk, material risk, environmental risk and economic risk.

3. Risk quantitative assessment of Physical education in primary and secondary schools. Based on the risk index system of physical education in primary and secondary schools, importing the risk management two-dimensional matrix evaluation method, through risk probability and risk impact measurement form the physical education risk matrix and risk level in primary and secondary schools. The result shows that among the five categories of risks, the personnel risk is the highest; the management and material risk ranked the second; and the other risks such as environmental risk and economic risk are the lowest. Among them, personnel risk includes 13 high-risk factors, 26 mid-risk factors and 4 low-risk factors.

Conclusions: A deeper study on the relationship of risk factors resulting in physical education should be considered.

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349 | Synthesis of Mn-based nanoprobes for colorectal MR T$_1$ imaging

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Background: Although colorectal diseases can be diagnosed with colonoscopy, such as colorectal cancer, colorectal polyps, colorectal ulcer. However, colonoscopy is an invasive technique. Besides colonoscopy, Multi-detector computed tomography (CT) play an important role to diagnose these diseases. However, CT has radiation dose which is harmful to patients. Magnetic resonance imaging (MRI) can provide much information to colorectal organs, such as axial MR imaging, coronal MR imaging and sagittal MR imaging. As an organ of colorectal tract, a positive contrast agent is applied for measuring the colon and rectum. Nowadays, gadolinium-based contrast agent is widely used in clinical examination as positive contrast agent. However, this kind of contrast agent will induce potential damages to kidney and other tissues. Therefore, we developed MnO_2-based nanomaterials for colorectal MR T$_1$ imaging.

Methods: We have successfully synthetized poly(acrylic) acid (PAA) modified MnO_2 (MnO_2 @PAA). TEM was applied to evaluate the shape of nanomaterials. XRD was applied to evaluate the crystalline structures of nanomaterials. FT-IR was applied to evaluate the conjugated PAA. MTT test was applied to evaluate the cytotoxicity of nanomaterials. Hematoxylin and eosin staining was used to evaluate the cytotoxicity of nanomaterials. GE MR scanner was used to evaluate the MR imaging of nanomaterials. Kunming mice and Wister rats were purchased from Jilin University.

Results: The TEM and SEM results indicated that the obtained poly(acrylic) acid modified MnO_2 are uniform materials. The XRD spectrum confirmed the crystalline of MnO_2, which can be indexed to face centred cubic structural magnetite. MTT test showed the nanomaterials with low cytotoxicity of. Hematoxylin and eosin staining confirmed the results of long-term toxicity with no damaged cell.

Conclusions: In conclusion, we successfully prepared poly(acrylic) acid modified MnO_2 for colorectal MR T$_1$ imaging. These well-prepared nanomaterials owned ideal stability and low cytotoxicity because of the well modification of PAA on the surface of MnO_2. The results of In vitro and In vivo colorectal MR T$_1$ imaging confirmed that the nanoprobes exhibited excellent imaging features.

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BCPT
Basic & Clinical Pharmacology & Toxicology

350 | Research on the construction and constraint mechanism of ecological civilization evaluation index system based on time series analysis

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Objectives: At present, under the background of China's economy shifting from high-speed development to high-quality development, the development of each region is no longer the only GDP standard. The indicators and evaluation systems for measuring regional economic development are increasingly diversified, comprehensive and scientific. Along with the green water mountain is the new environmental protection concept of Jinshan Yinshan, all localities take the economic development into the new normal as an opportunity to eliminate air pollution, water pollution and land pollution as the focus, increasingly strengthen the concept of green development, and take the construction of ecological civilization as the focus. Hands promote economic development. The construction of ecological civilization has become the main indicator to measure the quality of economic development. The research theory of this topic helps to grasp the essence of the development of ecological civilization and can provide a certain guiding role for governments at all levels to achieve the development of strategic goals. Governments at all levels can formulate various measures accordingly, from a systematic perspective as soon as possible. Realize the development goal of ecological civilization construction. By monitoring the progress of different indicators, we can find out the weak links and existing problems and deficiencies in the process of ecological civilization construction, thus providing a scientific basis for the formulation of relevant decision-making measures.

Methods: (1) According to the interpretation and definition of the theory of ecological civilization construction, it mainly analyzes the research content of ecological civilization and the construction of evaluation system. (2) Through in-depth analysis of the province's resource problems. Regional differences in environmental issues and their causes, the focus and particularity of the assessment of resources and environmental issues in each region are identified and selected. The focus and direction are given for the evaluation of ecological civilization. (3) The system sorts out the higher frequency and key indicators of the existing evaluation index system, implements in-depth analysis, takes the principle of index system construction as the premise, takes innovation as the goal, separately considers regional differences and scale urban functions, and constructs to adapt to different regional characteristics. The evaluation index system of differential ecological civilization construction and specific calculations are carried out, and the development level and progress rate of ecological civilization in each region are obtained, and marginal analysis is carried out. (4) Based on the spatial difference analysis of the development level of ecological civilization in each region, the management scope and constraint mechanism involved in the current ecological civilization construction are obtained. On this basis, the ecological civilization assessment system, assessment system, restraint system and promotion are gradually improved. Policy recommendations and constraints mechanism measures for the construction of ecological civilization. (5) In the construction of mathematical models, we use the analytic hierarchy of modern mathematics and mathematical statistics, coupling analysis theory, time series analysis, cluster analysis, Bayesian prior estimation and prediction, fuzzy evaluation and decision matrix, build a more comprehensive mathematical model. (6) In the large amount of empirical data processing, we will use big data processing and parallel distributed cloud computing. Using the sequential decomposition algorithm in mathematical statistics to establish the corresponding mathematical model and perform mathematical analysis, including using modern mathematical theories such as cluster analysis, Bayesian prior estimation and prediction, fuzzy evaluation, big data processing and cloud computing on empirical data, and regression test on the empirical results, the empirical results are more accurate and effective. (7) Through the classification and integration of the indicator system, using the established mathematical model. Using the mathematical model of time series analysis for comprehensive evaluation, analysis and prediction, through the maximum entropy of spectrum analysis method for the AR model, according to the forward prediction error the sum of the variances of the backward prediction errors is the smallest criterion, and the calculation formula and steps are as follows:

$$y_1(t) = x(t) - m_1 \tag{1}$$

$$y_n(t) = \sum_{i=1}^{n} c_i(t) + r_n(t) y_{n-1} \tag{2}$$

$$f_{\text{bef}}(x) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{|x-x_0|}{\sigma^2}} \tag{3}$$

$$\text{NRBF} = \frac{\sqrt{\frac{1}{n} \sum_{i=1}^{n} [x(i) - \hat{x}(i)]^2}}{\sqrt{\frac{1}{n} \sum_{i=1}^{n} [x(i) - \bar{x}]^2}} \tag{4}$$

$$\hat{Y}(l) = \mathfrak{R}_n(k) + c_{(n+k)}, \quad k = 1,2,\cdots \quad (5)$$

Results: According to the above guiding ideology and principles, after the establishment of the index system in science, based on the time series model, the mathematical model of evaluation and decision-making is constructed. We can quantify the ecological civilization indicators of a certain local area and combine them based on the AHP method. Static and dynamic decision matrices, cluster analysis, Bayesian prior estimation and predictive analysis, and parallel-distributed cloud computing, using fuzzy judgments of fuzzy mathematics theory to give evaluation results, and draw the development level and progress of ecological civilization in various regions. Rate and conduct marginal analysis. The following is the empirical analysis of a local area:

Conclusions: The construction of ecological civilization has become an important indicator of the goal of realizing the development of socialism with Chinese characteristics in the new era. The construction of the ecological civilization index system in the new era reveals the connotation of ecological civilization construction from different aspects and perspectives, thus pointing out the direction and focus for the realization of the goal of ecological civilization. This topic accurately grasps the specific connotation of the quality of economic development and the people's requirements for high-quality life in the new era, analyzes the higher quality requirements of the ecological civilization construction index system under the new era and new environmental protection concept, and makes it more scientific, reasonable and new. The framework design of the indicator system required by the times. In the evaluation system, it not only reflects the differences in different regions, but also makes the evaluation results comparable and versatile. Establish a more scientific, rational and comprehensive evaluation model, comprehensively apply modern statistical analysis theory, cluster analysis theory, analytic hierarchy theory, time series analysis theory, big data and cloud computing to give scientific and objective to the ecological civilization construction
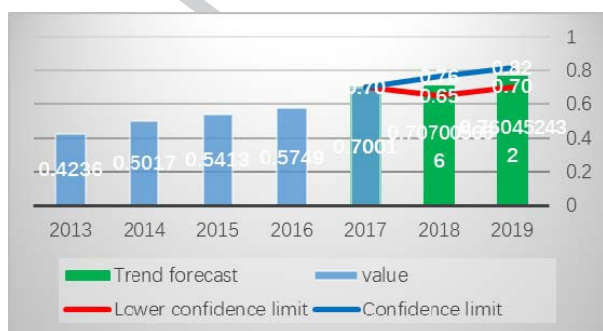
in all regions of our province. The evaluation, through the analysis of the evaluation results, identifies the advantages, disadvantages and shortcomings in the construction of ecological civilization in various regions, and provides a basis for governments at all levels to formulate policies and establish scientific early warning and restraint mechanisms.

351 | Facile synthesis of Fe_3O_4-based nanoprobes for MR imaging-guided photothermal cancer therapy

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Background: Magnetic resonance imaging (MRI) as a kind of excellent methodology has been extensively used to identify and diagnose in initial stage of tumours, which is critical for breast cancer therapy. For the sake of improve the precision of MR examination, the contrast agents (CAs) are generally employed to enhance the signal of lesion to distinguish clear boundaries between tumour and normal tissues in clinical. Among them, pH-responsive MRI CAs have attracted widely interests since the microenvironment in solid tumour tissue is acidic regardless of the types and stages of breast tumours.

Methods: We have successfully constructed poly(acrylic) acid (PAA) modified pH-responsive T_1/T_2 dual-model MRI CAs with Fe_3O_4 nanoparticles (NPs) as the core, MnO_2 nanoshells as the shell ($Fe_3O_4@MnO_2@PAA$). The novel CAs can realize not only pH-responsive T_1-weighted imaging due to the generation of paramagnetic manganous ions in breast tumour microenvironment, but also T_2-weighted imaging to better display the internal anatomical structure and distinguish clear boundaries between tumour and normal tissues, providing more accurate information for clinical treatments. Importantly, $Fe_3O_4@MnO_2@PAA$ had excellent absorption in near-infrared (NIR) region, making them as good photothermal agents. Thus, these findings validated that $Fe_3O_4@MnO_2@PAA$ are hopeful for pH-responsive T_1/T_2 dual-model MRI guiding photothermal therapy (PTT).

Results: The TEM and SEM images showed that the obtained Fe_3O_4 NPs are uniform sphere-like particles with average diameters around 45 nm. The XRD spectrum confirmed the crystalline nature of Fe_3O_4 NPs, which can be indexed well to the face-centred cubic structural magnetite.

Conclusions: In summary, we successfully synthesize $Fe_3O_4@MnO_2@PAA$ NPs for pH-responsive T_1/T_2 dual-model MRI guided PTT. Fe_3O_4 core endows $Fe_3O_4@MnO_2@PAA$ NPs with the capacity of realizing T_2-weighted MRI CAs, and MnO_2 nanoshells offer them great potential for pH-responsive T_1-weighted MRI. Such pH-responsive T_1/T_2 dual-model MRI not only improved the sensitivity and specificity, but also provided more comprehensive information for diagnosis of tumour. Interestingly, $Fe_3O_4@MnO_2@PAA$ NPs exhibit good photothermal performance owing to the strong NIR absorption, achieving the purpose of killing cancer cells without normal tissues damage. Therefore, we believed that this nanocomposite could be a promising pH-responsive theranostic agent for providing detailed and accurate information for diagnosis as well as for cancer therapy.

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352 | Biological and pre-clinical evaluation of designed surgical biodegradable membranes derived from small intestinal submucosa of rabbit for bone regeneration

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Objectives: Acellular matrix based on native tissues has potential applications in tissue engineering and regenerative medical devices. These constituents are expected to play an important role as scaffolds in tissue engineering for the generation of tissue and organs. Cell proliferation could be accelerated by cytokines of the small intestinal submucosa (SIS) [1,2]. SIS can support a suitable surface for cell attachment, proliferation, differentiation, and migration. Therefore, the SIS could act effectively as a scaffold. In this study, new biodegradation materials have been

designed and the characterization and evaluation of native and designed surgical biodegradable membranes derived from small intestinal submucosa (SIS-SBM) are studied. To be used as a good cell scaffold for repair and regeneration of bone, the in vitro evaluation such as biodegradable property and morphology of microstructures would be important. In this study, the SIS-SBM derived from rabbit were designed. The aim of this study to establish a biological and pre-clinical evaluation of the resulting designed SIS-SBM as a biomedical scaffold for the cartilage template for repair and regeneration of bone.

Methods: The compounds of PBS (Biological industries), Trypsin with 0.02% EDTA-4Na (Sigma), NaOH (riedel-de haen), NaCl (J.T. Baker), HCL (J.T. Baker), and peracetic acid (J.T. Baker) were used in the study. The small intestinal submucosa (SIS) of New Zealand White Rabbit was denatured to prepare with a designed biomaterial with acellular matrix. Furthermore, the cross-linked SIS membranes were prepared from the resulting native SIS membranes. The compound of 1-ethyl-3-(3-dimethylaminopropyl) carbodiimide hydrochloride (EDC) was employed in the preparation of cross-linked SIS materials. To make a chemical cross-linked SIS layer, the native SIS layer was immersed in 2 ml of 50 mM 2-(N-morpholino) ethanesulfonic acid in 40% ethanol (pH 5.0) with various concentration of EDC and 6 mM N-hydroxysuccinimide at 4°C for various reaction times. The native and cross-linked SIS membranes were evaluated for biodegradation in the absence and presence of 10 mg/mL collagenase solution. A scanning electron microscope (SEM, S-2250N, Hitachi, Japan) was used to examine the structure of the prepared SIS sheets.

Results: Take the SIS of New Zealand White Rabbit, after a series of process such as degreasing, lyophilization and enzymatic hydrolysis, the designed SIS-SBM with acellular matrix could be obtained as a biomedical scaffold [1]. Biodegradation of SIS-SBM has been evaluated by using collagenase within Hank's solution with 10 mg/mL collagenase. The remarkable degradation of a native SIS sheet within Hank's could be observed. In the specific system, the collagenase would not be employed in the biodegradation evaluation. The slight biodegradation of SIS-SBM was observed. That is, the surgical biodegradable membranes can be stable in PBS without collagenase before clinical
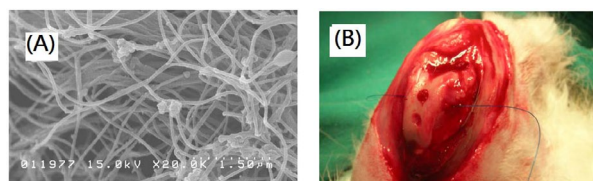

Figure 1. Biological and pre-clinical evaluation of novel surgical SISBM. (A)PPC loaded onto the surgical SISBM as a scaffold for 7 days and (B) the PPC sheet implant derived from the resulting surgical SISBM for rabbit bone regeneration

treatments. Periosteal progenitor cell (PPC) was subsequently loaded onto the resulting surgical SISBM at a concentration of 1×10^3 cells/ml on 24-well plates and cultured in a humidified 5% CO_2 incubator at 37°C for 24 hours. The cell-seeded SIS-SBM were then characterized by means of MTT assay, live/dead cell viability/cytotoxicity kit (L-3224; Molecular Probes, Eugene) and morphological study using SEM. The morphology of PPC loaded onto surgical SISBM for 7 days was observed in Figure 1(A). The PPC loaded onto surgical SISBM could be play a role of PPC sheet implant for clinical application of bone regeneration as shown in Figure 1(B).

Conclusions: The novel designed SIS-SBM was successfully derived from rabbit. Furthermore, biological and preclinical evaluation of the resulting SIS-SBM was achieved. In this study, the results demonstrate that a new biomedical material was created as a transient cartilage template with potential to direct tissue and bone formation after implantation.

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353 | A clinical ontology extraction method with similarity calculations in knowledge-based clinical case reasoning

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Objectives: By considering the advantages of the Case-based Reasoning (CBR) in clinical decision support system, this paper aims to construct a new clinical ontology method and put forward the methods and processes of common clinical case knowledge acquisition in combination with the method of obtaining structured information.

Methods: Based on the analysis of similarity calculation methods, this paper designs a similarity calculation method based on various types such as text type, degree type, numerical type, time type, and so on.

Results: The validity of the similarity calculation method and the weight calculation method is verified by the experiment based on the KEGG Pathway given the real clinical data. Table 1 demonstrates a representative sample of the KEGG pathways

TABLE 1 Comparison of *P*-values for gene similarity

KEGG Pathway	No. of genes	Proposed Method	Node-Based		Hybrid	Edge-based	Co-occurrence based
			Lin	Resnik	Wang	Lc	PMI
hsa00511	5	0.006	0.01	0.01	0.01	0.01	0.13
hsa00450	11	0.015	0.43	0.02	0.83	0.14	0.35
hsa00760	15	0.016	0.92	0.93	0.81	0.34	0.09
hsa00270	20	0.000	0.67	0.01	0.11	0.17	0.37
hsa00310	23	0.105	0.20	0.26	0.07	0.64	0.78
hsa00350	30	0.001	0.96	0.49	0.88	0.13	0.48
hsa00330	38	0.001	0.96	0.68	0.23	0.26	0.16
hsa00980	45	0.001	0.04	0.07	0.02	0.01	0.01

used for evaluation comparison, where the proposed method outperforms all the other methods by a significant margin. The main reason is that it does not entirely rely on the graph structure compared with the other methods and uses co-occurrence to pick similarity between the terms that are not connected directly because of the limited relationship types in GO.

Conclusions: With the increasing popularity of medical information, the requirements of community for clinical diagnosis and treatment and medical service quality continue to increase. Clinical decision support system can significantly reduce the misdiagnosis, misdiagnosis rate and standardize medical treatment of the role of the medical treatment process. The proposed model can be effective for improving the quality and level of clinical services for medical service organizations. Hopefully, it could contribute to the current focus of intelligent medical services.

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354 | On the construction of big data technology statute by current law through the concept of "big data person"

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Background: The subversive and off-generation emerging technologies represented by big data technology continue to leap forward, making us actually in a state of no defense for a long time. From the ethical norms of the past, it is impossible to play an effective statute for its forcing function. And the reason why its forcing function can be invincible is precisely because we are defenseless. At the same time, we have to let the negative impact of big data technology continue to accumulate. The long-term consequences of this accumulation are extremely risky and uncertain. With the rapid development of big data technology, the substantive difficulty of legal and ethical stipulations for it is that while big data technology is widely used, traditional ethical resources cannot be effectively filled and solve the ethical problems caused by big data technology.

Methods: Starting from the concept of "big data person", the so-called big data person is the result of holographic mapping generated by person through big data technology, that is, the complete set of all data traces generated by person through the Internet, mobile internet, and Internet of Things. It is the big data form of all human behaviors and the motives and purposes surrounding the behavior, which is the result of the mapping of real and specific people through big data technology under the conditions of specific social history. Big data person is the big data form of human experience world and life process. With the sum of social relations and subjective consciousness, it's also a necessary and organic part of human life and even human nature. Achieving an effective statute for big data technology is essentially to achieve effective protection for big data person, because the violation of human by big data technology must be caused by its violation of big data person. The bottom line for protecting big data person also needs to be fully expanded with the current law as a reference system and starting point. Relevant departmental laws involved include civil law, commercial law, intellectual property law, economic law, labor and social security law and criminal law. Taking civil law as an example, civil rights such as personality rights, property rights, and creditor rights are basic rights that need to be extended and protected against big data person. To violate these rights of big data person, they must bear corresponding tort liability and liability for breach of contract. Taking the personality right as an example, it corresponds to the specific personality rights (including the right to life, health, body, name, portrait, reputation, privacy and marriage autonomy), general personality rights, and quasi-personal rights (including the right to honor and personal information) enjoyed by natural person, and big data person should all enjoy the corresponding extended rights of these rights and be effectively protected by these extended rights regulations.

Results: From the "human-legal" relationship structure and framework, the "big data person-law" and even "big data person-ethics" relationship structure and framework are fully expanded. In the technical dimension, the expanded content is combined with the relevant technical links, technical architecture, systems, software and hardware of big data technology, and focuses on their specific impact on big data person. In the industry dimension, the expanded content is combined with the related applications and application scenarios of big data technology, focusing on the big data person in the scene. Finally, the construction of big data technology statute system with big data person oriented is realized.

Conclusions: Using current law as basis and frame of reference to correspondingly build the big data technology statute system with big data person oriented that can overcome the locality, abstraction and ambiguity of the previous big data technology ethics statute, will systematically, clearly and effectively face and solve the impacts and challenges brought about by specific technical infringement problems,

and finally realize the human-oriented big data technology stipulation.

355 | Preclinical evaluation of designed extra permeable anti-adhesion protecting membranes with low residual formaldehyde contents via active molecules cleaning process for diabetic foot ulcer wound management

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Objectives: High permeability of protecting dressings such as cross-linked polyvinyl alcohol foam (cPVAF) or polyurethane (PU) foam/film or non-woven dressings could be employed for the clinic application of diabetic foot ulcer wound management. However, polyurethane foam or non-woven dressings showed poor cell or tissue anti-adhesion property. Although cross-linked polyvinyl alcohol foam dressings show good cell or tissue anti-adhesion property. The cPVAF dressings with residual formaldehyde contents would be a risk of wound management of diabetic foot ulcer. The EPAP membranes would be designed and prepared. Furthermore, the diabetic foot ulcer could be care with negative pressure wound therapy (NPWT) or low-level laser therapy (LLLT) by using the resulting anti-adhesion protecting membranes with low residual formaldehyde contents.

Methods: The high permeability of protecting dressings could be clinically applied to create an optimal wound healing environment. The cPVAF could be considered as a good material for the protecting dressings. However, the commercial cPVAF wound dressings showed relative high formaldehyde residual contents (>30 ppm), which would be a risk of wound care of diabetic foot ulcer. In this work, the new extra permeable anti-adhesion protecting membranes (EPAP membranes) with low residual formaldehyde contents (<1 ppm) could be prepared by using medical grade Cenefom PVA materials. Furthermore, a combination of novel active molecules cleaning process and a super clean air-foaming process was designed and employed to build up an extra permeable microenvironments and architectures in the protecting membranes, which show low residual formaldehyde content and good cell or tissue anti-adhesion property. The

negative pressure wound therapy device (Curatios Model: FC-SHT0001, Shi Heng Tech. Co., Ltd) was employed for NPWT. The LLLT was applied by a GaAlAs semiconductor diode Laser Phototherapy Device (Model: T-816, Transverse Industries Co., Ltd) with a wavelength of 660 nm. The laser radiation for promoting diabetic foot ulcer therapy could also be applied by using selected acupunctures points with an energy density of 4 J/cm^2 for each point.

Results: Formaldehyde (FA) is an occupational pollutant that is widely used in many products, including disinfectants, cosmetics, antiseptics and fungicides and is widely used in the manufacture of biomedical materials. FA causes a disruption of the physiological balance between oxidant and antioxidant enzymes in lung tissue. Hence, it is important that new EPAP membranes with low residual formaldehyde contents (<1 ppm) using cross-linked polyvinyl alcohol foam materials was designed and prepared for diabetic ulcer wound management. Furthermore, preclinical evaluation of new designed EPAP membranes with low residual formaldehyde contents dressings could be established by determining morphology, water permeability, macroporosity property of resulting EPAP membranes. Comparison with related products was also studied. The water permeability of the resulting EPAP membranes could be observed higher than 90%, which is remarkable higher value among other commercial dressings with water permeability lower than 60%, by using ASTM D4491 (standard test methods for water permeability). The treatment could be applied by negative pressure wound therapy
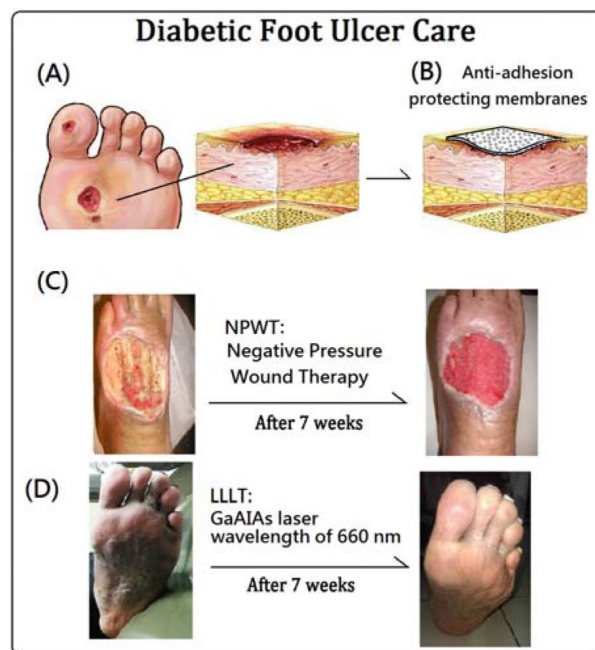

Figure 1. Schematic diagrams of (A) diabetic foot ulcer, (B) an anti-adhesion protecting membrane, (C) clinic condition with NPWT, and (D) clinic treatment with LLLT.

unit for NPWT or a GaAlAs semiconductor diode laser for LLLT of diabetic foot ulcer wound management, respectively, by using the anti-adhesion protecting membranes with low residual formaldehyde contents. The preclinical Evaluation of diabetic foot ulcer wound management by using a combination of the designed EPAP membranes and NPWT/LLLT could be observed in good conditions after seven weeks as shown in Figure 1.

Conclusions: The NPWT and LLLT were an important medical procedure for diabetic foot ulcer wound management. The suitable EPAP membranes were successfully prepared and employed to enhance and promote wound healing in wounds, even in acute, chronic and burn wounds and good clinic results were observed.

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356 | Investigating the clinical efficacy of fungal treatment with butenafine and bifonazole nitrate

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Objective: Numerous drugs have been approved recently to treat different kinds of fungal infections worldwide, but not fully studied in regard to clinical efficacy and safety. In this study, we aimed to compare Bifonazole which belongs to the imidazole group and has a broad spectrum of action against superficial mycoses with Butenafine, an antifungal agent with primary fungicidal activity in the treatment of the dermatologic infections.

Methods: Using a randomized, double-blind, parallel-group study to investigate a total number of ninety-six patients proved to have dermatological fungal. One-half of the patients applied twice-daily Bifonazole hydrochloride cream 1%, while the other half applied twice-daily Butenafine hydrochloride cream 1%. Treatment was continued for two weeks to treat Tinea cruris, Tinea corporis and Tinea versicolor, while Tinea of feet and hands was treated for four weeks.

Assessment of therapeutic efficacy and safety was conduct through a clinical examination with laboratory tests. This was done on the initiation of treatment, during the treatment and two weeks after the completion of treatment. Cure cases should be confirmed by both microscopically and on culture to be negative. If one of them is positive this is considered to be a not-cleared case.

Results: At end of treatment there was a slightly higher therapeutic in the Butenafine hydrochloride cream 1% group compared to the Bifonazole hydrochloride cream 1%group as shown in table 1. However, there was a high efficiency noticed for both drugs after the end of treatment and two weeks later as demonstrated in Table 1 and 2.

Laboratory examination findings also demonstrated a high clearance rate is for both drugs thought the treatment period and in two weeks follow-up as shown in Table 3.

TABLE 1

	Cases	Cured	Obvious effectiveness	Improved	Efficiency
BTF group	48	12	32	4	91.7%
BFZ group	48	7	34	7	83.3%

No significant difference was noted between the two groups ($P > 0.05$.).

TABLE 2

	Cases	Cured	Obvious effectiveness	Improved	Efficiency
BTF group	48	36	9	3	93.7%
BFZ group	48	33	11	4	91.7%

TABLE 3

	Cases	Cleared	Clearance rate
BTF group	48	42	87.5%
BFZ group	48	40	83.3%

Table 3. The cure rate (negative microscopy and culture) showed no difference between the two groups at end of treatment ($P > 0.05$).

No serious adverse effects: Laboratory examination showed no abnormality in the two groups before and after treatment.

Conclusions: Treatment of dermatological fungal infection with Butenafine hydrochloride cream 1% and Bifonazole hydrochloride cream 1% has shown to be effective to achieve rapid and complete relief of signs and symptoms with no apparent serious adverse effects. Although Butenafine hydrochloride cream 1% showed slightly higher clinical and Butenafine hydrochloride cream 1% clinical and laboratory tests showed higher cure rate for Butenafine hydrochloride cream 1%, however, the differences between the two drugs were not statistically significant ($P > 0.05$).

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357 | The relationships between business strategy, knowledge management, and innovation performance—A case study of the medical instruments and apparatus industry

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Objectives: The purpose of this study is to explore the differences among business strategy, knowledge management, and innovation performance, the correlations between business strategy and knowledge management in Taiwan's medical industry.

Methods: The research designed a pilot study. Several technologies are listed for respondents to choose as the target technology being introduced. The questionnaire is designed into four parts. The first part was to collect the data of categories about business strategy. The second was to collect the data of technique about knowledge management third parts gather data about product innovation performance, process innovation performance, and R&D innovation performance. The target population comprised medical device companies that were listed as members of the Taiwan Medical and Biotech Industry Association or the Taipei Medical Instruments Commercial Association. Stratified random sampling (divided by type of business) was used to select 230 companies in Taipei and 246 companies in other areas of Taiwan. Random sampling was used to choose managers of these companies at or above the level of R&D director, general president, or vice president and a total of 476 questionnaires were distributed to the managers. After constructing the questionnaire and determining the survey sample, questionnaires were mailed to prospective participants. Telephone calls were made and emails were sent to prospective participants to encourage them to complete the questionnaire. A total of 104 questionnaires were collected; among these, 100 were effective and 4 were ineffective. The effective response rate was 21.01%.

Results: Major findings of the study include: (1). Business management strategy or knowledge management has significant influence on innovation performance. (2). Knowledge management has significant positive influence on product innovation performance and R&D innovation performance. (3). Knowledge management is the mediating variable between Prospector Strategy and product innovation performance, R&D innovation performance.

Conclusions: The medical device industry has been listed by the government as one of the top ten emerging Taiwan's industries and as a target of focused development in the 21st century. Thus, the medical device industry was chosen for the present study for an exploration of the correlations between business strategy choices, knowledge management capabilities, and innovation performance.

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358 | Preclinical evaluations and morphology of deigned collagen III/I complex dressings with ECM microstructure derived from a combination procedure with supercritical carbon dioxide fluid process for diabetic foot ulcer wound managements

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Objectives: Repair and regeneration of diabetic foot ulcer wound is one of the most extensively studied areas in the field of tissue engineering. The goals of the study are to prepare and characterize designed collagen III/I complex
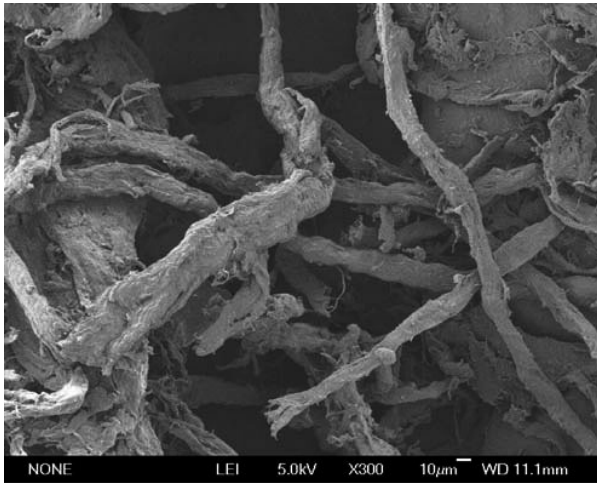
BCPT
Basic & Clinical Pharmacology & Toxicology

Figure 1. The morphology of designed collagen III/I complex dressings with an ECM microstructure

dressings with an extra cellular matrix (ECM) microstructure (ECMCCD-III/I) as a scaffold for the cartilage template, and to establish a preclinical evaluation of the resulting collagen sponges with ECM. These results demonstrate that we have created a transient cartilage template with potential to direct diabetic foot ulcer wound tissue formation after implantation. In this study, a combination procedure with supercritical carbon dioxide fluid (SCF-CO_2) process was used.

Methods: Identification of characteristic peptides was carried out by using MS spectrum and zoom scan spectrum, which could be used to determine the m/z of ions and the corresponding charge states (ESI-MS; LTQ XLTM, USA). The peptide sequences were characterized by MS/MS sequencing. Dynamic exclusion was performed during MS/MS to analyze as many ions as possible in the same chromatographic peak. Furthermore, quantitative detection of characteristic peptides was studied. The porcine collagen III/I standard was employed and injected at different concentrations after enzymatic hydrolysis, the injection volume was 50 μL. The collagen III/I standards were purchased from YO Proteins AB (Sweden). The peak area of the characteristic polypeptide is calculated according to the calculated peak area of the extracted ion chromatography of collagen standards. The standard curve was drawn based on the peak area and injection concentration. Selection of ISO9001 quality certification and ISO14001 environmental certification, the steadily thickness of about 1.0 mm of dermal tissue could be obtained from porcine skin by using a designed tissue-cutting machine (Taiwan PARSD Pharm. Tech. Consulting Ltd Co. and KUIN Biotech. Ltd Co.).

Results: The back skin of adult pigs were employed to be starting materials for new ECMCCD-III/I and treated to obtain an enzymatic hydrolyzate by degreasing, lyophilization and enzymatic hydrolysis [1]. The resulting enzymatic hydrolyzate was analyzed by using MS spectrum and zoom scan spectrum. The relative content of type III/I collagen is the ratio of its concentration to the total concentration of injection (1 mg/mL). The total ion chromatogram of the porcine collagen enzymatic peptide was determined. The result indicated that digest mixtures of porcine collagen I contained many different peptides. These two characteristic peptides of collagen III/I have a high abundance, and the secondary fragment ions have a high degree of matching with the theoretical values, which can be used as the characteristic peptides for porcine collagen type identification and quantitative detection. The pig with target age of three months containing 49.72% of collagen I and 7.88% of collagen III were employed to prepare new ECMCCD-III/I for further clinic applications such as diabetic foot ulcer wound managements. Collagen III is mainly found in mammalian embryos and infants, while collagen I mainly in adult skin, and they are closely related to the repair process and quality of skin damage [2]. Collagen III is beneficial for self-healing of skin damages and collagen I devote to the physical properties of the dermis [2, 3]. That may be a protective mechanism evolved by mammals to adapt to the environment. The morphology of the resulting ECMCCD-III/I was determined for preclinical evaluations (Figure 1).

Conclusions: The content of collagen III/I in pig dermis was detected by the method of quantitative detection of characteristic peptides. The ECMCCD-III/I were obtained by using a novel procedure combining a SCF-CO_2 process. Preclinical evaluations of ECMCCD-III/I were achieved.

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359 | Gene anti-tumor therapy applications to lung carcinoma: Adenovirus TOA2 shows low toxicity and inhibition effects on tumor growth in nude mice

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Objectives: Replication-competent adenovirus TOA2 is promising and exciting new anti-tumor therapy. However, the biodistribution and clearance are still largely unknown and require further research and tracking studies. The research of distribution is important for the safety of pre-clinical evaluation of trans-gene vector class of drugs. This experiment was carried out to explore TOA2 biodistribution and pharmacokinetic characteristics of organs in order to provide direct evidence for the predicted target organ toxicity.

Methods: The biodistribution of replication-competent adenovirus TOA02 was assessed in tumor-bearing nude mice with human lung carcinoma A549 cell line. Tumor-bearing mice were intratumorally injected with TOA2 at a concentration of 3×10^{10} VP (viral particles)/mouse. At the end of the in vivo experiments, mice were sacrificed when the tumors and the main organs of those mice were dissected and the Hexon gene copy number of TOA2 of each tissue sample was detected using Quantitative Polymerase Chain Reaction to identify its bio-distribution.

Results: The result of bio-distribution showed that adenovirus TOA02 can be copied well in tumor tissues. The concentration of virus carriers increased from 2240.54 ± 01.69 copies/100 ng genome (11th days, after the third dose) to 13120.28 ± 88.21 copies/100 ng genome (18th days). There

time	tumor	blood	liver	kidney	spleen	lung	heart	Bone	brain	testis	epididymis	ovary	uterus
11d	2240.54 ± 01.69	114.47 ±81.61	59.61 ± 2.20	44.61 ±6.38	31.1 ±28.60	10.24 ±8.6	1.03 ± 0.83	—	—	—	—	—	—
18d	13120.28 ± 88.21	215.23 ± 1.08	36.6 ±26.20	0.98 ±0.62	1.81 ±0.84	1.81 ±0.84	0.612 ±0.38	—	—	—	—	—	—
36d	336.45 ±23.41	—	—	—	—	—	—	—	—	—	—	—	—

Chart 1. Hexon gene copies of each tumor and organ (tissue: copies/100 ng genome, blood: copies/ml, n = 6). ——: Undetected

was high content inside, 336.45 ± 23.41 copies/100 ng genome, after 36th days. After eleven days from the first injection, the copy numbers of Hexon DNA of TOA2 in the tumors were significantly higher than in blood (2240.54 ± 01.69 copies/100 ng genome; 114.47 ± 81.61 copies/100 ng genome). There was a low amount of distribution in other organs; much less than in the tumors. The concentration gradient decreased steadily from the liver, kidney, spleen, lung and heart over time with no distribution in the gonads. On the eighteenth day, the distribution of TOA2 in tumors increased to 13120.28 ± 88.21 copies/100 ng genome, and reduced dramatically in blood and other organs. By the thirty-sixth day, there was no detectable distribution except in the tumor's tissues.

Conclusions: These findings show that TOA2 can reproduce to a large number inside the tumor's tissues and although disseminated to the organs with rich blood supply such as the liver, kidney, spleen, lung and heart; the virus eventually disappeared from these organs. This indicates a low toxicity and an efficient antitumor therapy through conditionally replicating the oncolytic activity.

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360 | Research on the new form of sports and tourism industry in China from the perspective of industry coupling

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Introduction: From the perspective of industrial value chain extension, the tension of the cross-symbiotic development of sports industry and tourism industry has surpassed the development trend of sports tourism. With the cross-border and deep development of sports and tourism industry, the trend of integration and innovation of the two industries to form a new format is becoming more and more prominent. From the narrow point of view of sports tourism, sports tourism has been unable to cover the trend of all-round cross-penetration and integration of innovation and development of the two industries around consumer demand, thus largely ignoring the complexity and diversity of the coupling development model between large sports industry and large tourism industry. Based on this, with the help of the coupling mechanism theory in physics and the phenomenon of industrial chain extension in industrial economics, the author explores the current situation of the integration and development of sports and tourism industry in China, and innovatively constructs

a new mode of development of sports industry and tourism industry under the mode of industrial coupling mechanism, with a view to promoting the virtuous circle of the new mode of development of sports and tourism industry in China from a relatively new perspective.

Methods: Documentation Method; Inductive method; Comprehensive evaluation function; Mathematical statistics and so on. The concrete calculation formula is as follows:

$$nui = \sum w_i j u_i j. \ j = 1$$

After standardization of positive efficacy function, the formula is as follows:

$$u_{ij} = (X_{ij} - X_{jmin})(X_{jmax} - X_{jmin})$$

Results: On the formation path of the new form of sports and tourism industry in China from the perspective of industry coupling: Development Model of Resource Cross-industry Coupling; Consumption-based Industrial Coupling Upgrading Mode of Development; Development Model of Sports and Tourism Coupled with Industry Chain Extension.

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361 | Biological evaluations of novel surgical complex sponges with type I/type III collagens via electrospray ionization mass spectrometry and quantitative detections

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Objectives: The aim of this study to establish a biological evaluation of surgical complex sponges (SCS) with type I/ type III collagens as a scaffold for the cartilage template for repair and regeneration of tissue, particular, by using HPLC-MS/MS analysis. The evaluation of surgical complex sponges was studied by using electrospray ionization mass spectrometry (ESI-MS). These results demonstrate that we have created a transient cartilage template with potential to direct tissue formation after implantation.

Methods: Selection of ISO9001 quality certification and ISO14001 environmental certification, the steadily thickness of about 1.0 mm of dermal tissue could be obtained
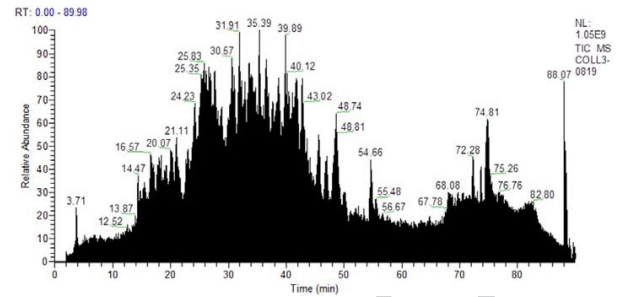

Figure 1. Total ion chromatogram of porcine collagen enzymatic peptide

from porcine skin by using a designed tissue-cutting machine (Taiwan PARSD Pharm. Tech. Consulting Ltd Co. and KUIN Biotech. Ltd Co.). Trypsin was purchased from Promega (USA);Type I and type III collagen standards were purchased from YO Proteins AB (Sweden). The online peptide identification was performed on electrospray ionization mass spectrometry (ESI-MS) (LTQ XLTM, USA). The spray voltage was 3.5 kV and the heat capillary was kept at 300°C. The scan range was set from m/z 300 to 2000. The zoom scan and tandem MS (MS/MS) functions were performed in data-dependent mode. The collision-energy value was 35%.

Results: Take the back skin of pigs, after a series of process such as degreasing, lyophilization and enzymatic hydrolysis, the enzymatic hydrolyzate could be obtained [1]. Furthermore, the resulting enzymatic hydrolyzate was analyzed by HPLC-MS quantitative detection method. The relative content of type I and type III collagen is the ratio of its concentration to the total concentration of injection (1 mg/mL). The total ion chromatogram (TIC) of the porcine collagen enzymatic peptide was determined. The result indicated that digest mixtures of porcine type I collagen contained many different peptides. For example, the ion, m/z 774.07, was a component in the digest mixture, zoom scan spectra indicated that this ion was double charged. MS/MS sequencing mass spectrum indicated that its sequence was GETGPAGPAGPVGPVGAR. This peptide was found in the sequence of α1 chain of porcine type I collagen. The peptides identification of porcine type III collagen is the same as the type I described above. The m/z of ion is 532.97, and its sequence was GP*PGAVGPSGPR (P*: hydroxyproline). These two characteristic peptides of type I and III have a high abundance, and the secondary fragment ions have a high degree of matching with the theoretical values, which can be used as the characteristic peptides for porcine collagen type identification and quantitative detection (Figure 1). As an increasing target pig age from three weeks to nine weeks, the content of type I collagen would be gradually increased from 25.81% to 42.17% and the content of type III collagen would be gradually decreased from 10.35% to 8.54%. The result reflected that the content of type I collagen in pig dermis

increases with the increase of pig age, while the type III collagen has the opposite trend [2, 3]. Different relative contents of type I and type III collagen could be considered in specific clinic applications. Furthermore, a series of porcine dermal materials with various relative contents of type I and type III collagen were obtained and employed to prepare acellular surgical complex sponges (SCS) with type I /Type III collagens for further clinic applications.

Conclusions: The content of type I and III collagens in pig dermis was detected by the method of quantitative detection of characteristic peptides. Biological evaluations of SCS with type I /Type III collagens were achieved.

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362 | Effects evaluation of humanistic care abilities for new recruited nurses based on the blending instructional teaching model

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Objective: To construct a the blending instructional teaching model for exploring effects of humanistic care abilities of new recruited nurses, so as to improve nurses' clinical practice skills.

Methods: In June 2018, 54 new nurses in the Second Affiliated Hospital of Lanzhou University were enrolled in the blending instructional teaching model. They were divided randomly into a traditional teaching group and a blending instructional teaching group with 27 samples for each group. In the traditional group, the samples were trained by unit routine activities with
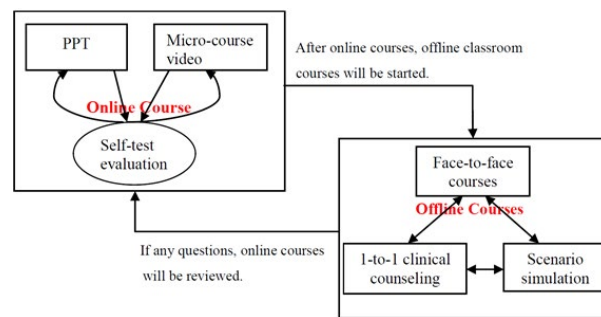

Figure 1. The flow chart of the blending instructional teaching model

128 hours and by warding round for teaching programs in each week with 27 teaching hours. For the blending instructional teaching model, online courses and offline classroom courses were used in blending instructional group in Fig 1. The online ones were finished by 27 new recruited nurses in the leisure time with three parts. There were 58 courses of online PPT, online micro-course video and online self-test evaluation. Firstly, the online PPT topics included nurses' professional standards, occupation schedules and procedures, nursing operations etc. Secondly, the online micro-course video was applied to explain and present the 5-10 minutes video courses finally. Finally, online self-test evaluation was set by 50 multiple-choice questions for each course. The 8 questions are randomly selected from these questions for each course. The offline classroom courses consisted of 97 teaching hours, including 72 hours of face-to-face courses of the new recruited nurses' induction training, 9 hours of 1-to-1 clinical counseling by the department trainer and course teacher and 16 hours of scenario simulation where the clinical situation is given by department trainers and the new nurses play the patient and nurse respectively to carry out clinical scenario simulation.

Results: The average scores of theory examination, practical skill and clinical intellectual in the blending instructional teaching group were significantly higher than that of the traditional teaching group. The satisfaction rate of students in the blending instructional teaching to the evaluation of teaching methods was significantly higher than that of the traditional teaching group, and the difference was statistically significant.

Conclusion: With its advantages of strong integration and combination of theory and practice, the blending instructional teaching brings more space to clinical practice teaching, and adapt to the current trend of teaching development, which can effectively improve the effectiveness of standardized training for gynecological residents.

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363 | Preclinical evaluations of novel controlled release transdermal delivery system derived from high permeability cross-linked polyvinyl alcohol foam with fully open-cell and open-channel microstructures for diabetic foot ulcer wound managements

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Objectives: Novel controlled release transdermal delivery system (CRTDS) was designed with specific controlled release microstructures such as an open-cell microstructure or an open-channel microstructure. High permeability of cross-linked polyvinyl alcohol (cPVA) foam could be employed for the clinic application of wound management. Furthermore, the cPVA foam with an open-cell microstructure and an open-channel microstructure could be observed. The open-cell microstructures and open-channel microstructures form a powerful continues space, which could provide a high permeability of resulting cPVA foam. At the same time, the resulting cPVA foam showed a good cell or tissue anti-adhesion property, which promoted a powerful clinic application of CRTDS. When the functional molecules were kept in the open-cell microstructure or an open-channel microstructure, the functional molecules would be released as the expanded volume of cPVA foam as absorption of tissue fluid on the surface of wound or skin.

Methods: The high permeability of protecting dressings could be clinically applied to create a suitable wound healing environment. The cPVA foam could be considered as a good material for the clinic applications. In this work, the new designed permeable cPVA foam with an open-cell microstructure and an open-channel microstructure could be prepared by using medical grade Cenefom PVA materials via a designed combination of novel active molecules cleaning process and a super clean air-foaming process in this work. An extra permeable microenvironments and architectures in the cPVA foam would be built up. The low residual formaldehyde (FA) content and good cell or tissue anti-adhesion property could be obtained for biological and preclinical evaluations of CRTDS.

Results: FA, which is an occupational pollutant, is widely used in the manufacture of biomedical materials. Hence, low residual formaldehyde content must be important issue for biological and preclinical evaluations of CRTDS for wound management. The cPVA foams with low residual FA contents (<5 ppm) could be obtained by using the designed active molecules cleaning process in this study. The active molecules such as supercritical CO_2 molecules or O_3 molecules were employed to reduce FA contents. At the same time, higher water permeability of the resulting cPVA foam was observed than 88% by using the ASTM D4491 test. It would be contributed to the specific microenvironments and architectures. The diameter of open cell was observed in a range between 50 μm and 100 μm and the opening diameter of open channel was observed in a range between 5 μm and 10 μm. The multiple opening of open channels could connect corresponding open cells. The architectures of open channels and their connecting corresponding open cells could provide a route for functional molecules and build up a kind of CRTDS. Preclinical evaluations of resulting CRTDS derived from high permeability cross-linked polyvinyl alcohol foam with fully open-cell and open-channel microstructures were carried out by using a negative pressure wound therapy (NPWT) device (Curatios Model: FC-SHT0001, Shi Heng Tech. Co., Ltd) for diabetic foot ulcer wound managements (Figure 1). The results of preclinical evaluations were showed in Figures 1(A,B).

Conclusions: The suitable permeable cPVA foam was successfully prepared and employed to enhance and promote wound healing in wounds, even in diabetic foot ulcer wound and good clinic results were observed. Also, low residual FA content, good cell and tissue anti-adhesion, high permeable property could be obtained for biological and preclinical evaluations of CRTDS because the specific microenvironments
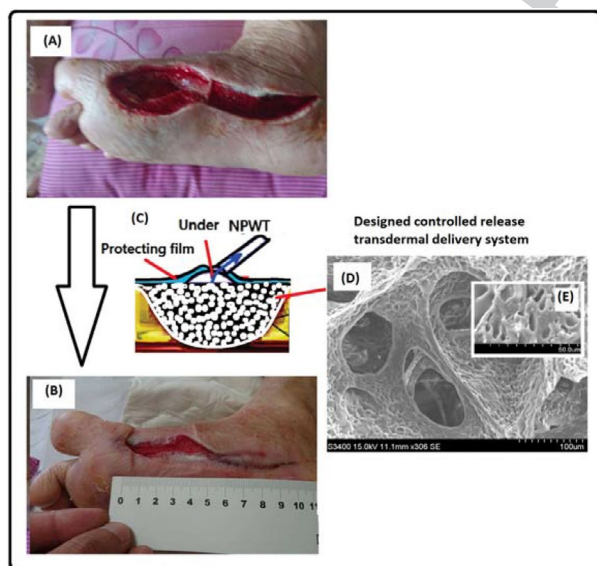
Figure 1. Preclinical evaluations of resulting CRTDS were carried out for diabetic foot ulcer wound managements, (A) before preclinical evaluations, (B) after preclinical evaluations, (C)under NPWT, (D) open-cell microstructures, and (E) open-channel microstructures

and architectures with fully open-cell and open-channel microstructures in the cPVA foam.

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364 | An energy functional model by gradient vector-driven active contour for local fitted image segmentation

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Objective: To design a gradient vector-driven active contour local fitted image segmentation model based on information entropy for analyzing the construction of the active contour model by the variational and level set methods for validating the proposed model theoretically and simulation experiments. **Methods**: Firstly, several important active contour models based on image boundary features are introduced, and the existing problems are analyzed in depth, and the causes of the problems are pointed out. Next, the non-conservative behavior of the gradient vector flow field is studied in depth, and an important conclusion about the flow field divergence of the gradient vector is obtained in the local fitted image segmentation model. On this basis, a new energy functional is constructed to measure the flux of the gradient vector flow field through the active curve, and transform the image segmentation problem into the minimum value of the energy functional. Finally, a new active contour model is constructed using the gradient flow of the above energy functional. **Results**: To demonstrate the performance of the development model, the method applies it to segmenting the composite image and the real image in a variational level set framework. The demonstration shows the segmentation result when the development model is applied to four clinical medical images having uniformity and complex image background intensity. As shown in these examples, the proposed model can accurately identify the boundaries of all target objects based on a randomly selected rectangular initial curve while successfully eliminating a large amount of undesired background information due to the presence of two different local information. Fitting images can effectively highlight ideal objects

with different texture features and significantly reduce the adverse effects of complex image backgrounds in image segmentation. By locally fitting the image, the approximate local region exhibits a unique intensity in emphasizing the intensity difference between the foreground and the background of the image to be segmented, which can be partially verified. **Conclusion**: These segmentation results can effectively demonstrate their performance in dealing with severe intensity inhomogeneities, extracting multiple target objects, and eliminating complex image backgrounds. In particular, CV and CEM models cannot handle intensity inhomogeneities and have the worst segmentation performance in these models; and the LBF, LIF, LGDF, and LRCV models can be somewhat from severe intensity inhomogeneities. Those regions are extracted from the desired object, but there are insufficient or excessive segmentation problems in the neighborhood near the target boundary. Unlike these models, the proposed model achieves better segmentation performance in terms of the accuracy of all four images based on the same initial contour curve.

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365 | Facial expression recognition of pain detection using recurrent neural networks

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Objectives: Facial expression is one of the most important factors in human emotional judgment. Ekman and Friesen studied six basic human expressions, these are happiness, sadness, surprise, fear, anger, disgust, and systematically created an image library of facial expression, detailing the face changes, including eyebrows, eyes, eyelids, lips, etc., corresponding to each expression. Expression recognition has made great progress in medical field, especially pain expression recognition judgment. Prkachin and Solomon proposed that the relationship between pain and the motor unit of the face: eyebrow gathering, eye closed, levator muscle contraction, and so on. We evaluate our proposed recurrent neural network on database STOIC, and focus on the facial expression recognition of the video for the pain detecting.

Methods: We could approximate the detection process as a model. $N_{(x)}$ To improve the recognition accuracy and get the temporal information, we perform systematic uniform sampling of each video in STOIC database. The basic architecture

of our pre-trained model composed of two convolutional layers and max-pooling blocks, followed by two fully-connected layers. Sigmoid is commonly used as the activation function in the traditional neural networks, but tends to cause the gradient vanishing problem, so that deep network training cannot be completed. The ReLU function will make some output of neurons zero, which cause the sparseness of the network, and reduce the interdependence of parameters, alleviating the occurrence of over-fitting problems. That could be written as: $\mathrm{ReLU}_{(X)} = \max(0,x)$. The recurrent neural networks composed of 64 hidden states and a softmax layer.

Results: In order to verify the validity of our model, this paper performed the step-by-step error test on the verification set. The experiments showed that our method could achieve good results for the pain detection task.

Conclusions: This paper suggests facial expression recognizer based on recurrent neural networks. The proposed framework with temporal information was superior to the previous methods on the accuracies for the pain detection.