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CONTENTS

Clinical Analysis of the Implementation Effect of Perioperative Accelerated Postoperative Rehabilitation Nursing in Patients with Hypertensive Cerebral Hemorrhage

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Abstract: Objective To investigate the operative clinical effect of accelerating postoperative nursing postoperative rehabilitation in rehabilitation nursing in patients with hypertensive cerebral hemorrhage (HICH).Methods According to the computer HIS system and inclusion criteria, 900 HICH patients were randomly divided into reference group and trial group with 450 patients in each group. All patients were admitted to 2020.1-2021.1. The preoperative anxiety, depression, health, intraoperative nursing management, postoperative rehabilitation effect evaluation was compared according to Triangle stratification method.Results The anxiety (SAS) and SDS) scores were significantly lower than the reference group ($p<0.05$), and the satisfaction (95.11%) was significantly higher than the reference group (88.00%) ($P<0.05$).The test group (the mos 36-item short from health survey, SF-36) scored significantly better than the reference group ($P<0.05$).Conclusion Effective perioperative accelerated care of HICH patients can its treatment and postoperative rehabilitation.Not only can reduce the patient postoperative anxiety, depression, reduce or reduce the postoperative stress response and complication rate, but also can help hypertension cerebral hemorrhage patients shorten postoperative care time, improve the quality of life and life function, language function, life ability recovery and can reduce complications, etc., accelerate postoperative nursing intervention to promote patient rehabilitation effect is significant, has the exact application value.
Key words: accelerated postoperative care; cerebral tension; perioperative; cerebral hemorrhage

hypertensive intratracerebral hemorrhage (HICH) is one of the common critical and serious complications of clinical neurology and hypertension. It is mainly caused by long-term cerebral arteriosclerosis and hypertension causing pathological changes in the small cerebral arteries[1]. Long-term hypertension can make the vitreous degeneration of the cerebral artery, first make the vascular subintima matrix swelling, subintima lipid precipitation, the formation of unstructured material between the intima and the internal elastic layer, reduced elasticity, increased fragility.The loss of vessel wall tension and cellulose necrosis, producing local arteries with spindle or spherical protrusion under blood pressure impact, namely millet aneurysm, blood can also invade the tube wall and form a dissecting aneurysm.When blood pressure rises abruptly, aneuryruptured the aneurysm ruptured and causes bleeding.Hypertension can also cause cerebral arteriole spasm, resulting in distal cerebral tissue ischemia, hypoxia, necrosis, and bleeding.In addition, the intratial artery wall is weak, the middle myocyte and adventitial connective tissue, and no external elastic layer, may lead to more hypertensive cerebral hemorrhage than other visceral hemorrhage.If effective care and treatment is not given in time, it can further increase the degree of brain tissue damage, and then worsen the brain dysfunction, leading in death or disability, and has a serious impact on the patient's physical and mental health and quality of daily life.Relevant literature indicates that[2], Effective perioperative care and care during the surgical treatment of HICH patients and postoperative rehabilitation care.The main nursing goal is to help patients shorten the postoperative nursing time after hypertensive cerebral hemorrhage, To relieve postoperative anxiety and depression, Using the (S AS) anxiety self-assessment form and depression self-assessment scale (SDS) score, To simultaneously reduce or reduce the postoperative stress response and complication rate, The Applied Health Survey Summary Form (the mos 36-item short from health survey, SF-36) for evaluation, in order to improve the quality of life, body function, language function, life ability recovery and can reduce the occurrence of complications.Accelerating postoperative implementation of nursing intervention to promote patients has a remarkable effect and has definite application value.Accelerating postoperative

implementation of nursing intervention to promote patients has a remarkable effect and has definite application value.Given this, this paper aims to accelerate the application of postoperative care effect in HICH patients during periprocedure.

1. DATA AND METHODS

1.1 BASELINE DATA

Selected 900 HICH patients admitted during 2020.1-2021.1 of our hospital as those included in this study, Following the inclusion of 900 HICH patients as the current study subjects, According to the computerized HIS system information and the inclusion criteria for patients with hypertensive cerebral hemorrhage, With the indication for craniotomy and hematoma operation; The investigators visited patients with anxiety, depression, and health, Intraoperative nursing management, The focus is to divide the effect of postoperative care into reference group and trial group, The two groups evaluated the nursing effect according to Triangle stratification and selected 450 postoperative nursing group of each group, Divided into the reference group and the test group, Two groups evaluated nursing effects stratified by Triangle with 450 cases in each group, All the patients were admitted to our hospital at 2020.1-2021.1, Compare the nursing effect between the two groups.The reference group was 230,220 women, 50-75, average (61.29 ± 1.24), 235,235,215,50-75, average (61.30 ± 1.29), no difference between the baseline data, P> 0.05.

Inclusion criteria: (1) cardiovascular and cerebrovascular risk factors: smoking, high-sodium diet, overweight and obesity, excessive exertion, climate change, adverse habits (smoking, alcohol, excessive salt, overweight), blood pressure fluctuations, emotional excitement, overwork and other inducing factors.

(2) Cardiovascular and cerebrovascular diseases: cerebrovascular malformation, meningeal arteriovenous malformation, amyloid cerebrovascular disease, cystic hemangioma, intracranial vein thrombosis, specific arteritis, fungal arteritis, moyamoya disease and arterial anatomical variation, vasculitis, and tumor stroke.

(3) Blood factors include anticoagulation, antiplatelet or thrombolytic therapy, haemophilus infection, leukemia, thrombotic thrombocytopenia, intracranial tumors, alcoholism and sympathetic excitation drugs, etc.

(4) Anxiety and depression of patients: anxiety is easy to cause blood pressure fluctuations leading to aggravation of bleeding, depression, etc.

(5) postoperative rehabilitation of cerebral hemorrhage

(6) Basic understanding and communication skills;

(7) Complete basic information and medical records.

Elimination criteria: (1) those with cognitive impairment or mental disorders; (2) patients with severe organ insufficiency; (3) patients with hypertension during pregnancy; and (4) those who withdraw from the study.

REFERENCE METHODS

Reference group: preoperative education, intraoperative and postoperative vital signs monitoring, postoperative observation and nursing, including measures such as regular turn over, monitoring of vital signs, daily education, medication nursing and so on.

Trial group implementation: preoperative visit, intraoperative management and accelerated postoperative rehabilitation care, specific contents are as follows: (1) preoperative visit: nursing staff shall visit the patient; through the through communication, evaluate the possible adverse reactions, surgical risk, surgical site, surgical method, disease progress, etc., inform family of postoperative health guidance, and explain preoperative and postoperative preparations.The operation notice and her band cover the following contents: operation time, operating room number, operation name, operation site, preoperative diagnosis, patient age, gender, name, etc. Before receiving the patient to the operating room, the operation notice covers the patient.(2) Intraoperative management: Device nurses and tour nurses shall define their respective responsibilities to ensure the safe treatment of the patients; arrange the position and ensure smooth breathing, comfort and safety of the patient, and carry out relevant nursing operations in strict accordance with the principle of sterility.(3) Analysis of postoperative management and accelerated postoperative rehabilitation and nursing effect: protect patients' privacy, take warm measures; sort out the relevant medical records, check the surgical information table again, protect various drainage pipes on the way, and handle the surgical situation and the intraoperative emergency.Strengthen postoperative observation and blood pressure monitoring, first, psychological care patients with cerebral hemorrhage after systematic clinical treatment, their body, language dysfunction, appearance and shape change are difficult to recover in a short period of time, will make patients have depression, depression, pessimistic psychology.Show irritability, shy to see people and other behavioral characteristics.Nurses should try to be considerate and care about patients, give more comforts, guidance and encouragement, and introduce some cases with good functional recovery, and stimulate patients' confidence to overcome the disease.At the same time, arrange some appropriate activities according to the condition.Such as watching TV, playing chess, listening to the radio to make the patient feel full of life, eliminate loneliness, so as to firmly overcome the confidence of disability, make its body and mind in the best state.Two, dietary care: the recovery period of patients with cerebral hemorrhage should be light, low fat, moderate protein, high vitamin, high fiber food, eat less and more meals,

do not eat animal viscera, animal oil, daily salt is not more than 6 grams, eat more vegetables and fruits.For facial paralysis patients, chewing dysfunction, adverse tongue activities, should easiest to eat|aside to eat|exist to eat thin and soft food, the action should be slow, the amount should be appropriate to reduce, to avoid choking cough or food obstruction of the respiratory tract .1 tract and suffocation.1. Functional exercise of facial paralysis with the thumb from the eyebrow arch between the eyebrows, through the temple to the inner canthus, and then through the alar, nasolabial groove, mouth to the Angle the jaw Angle, slowly knead, until the fever .2 fever and sour.2. Language function training: to practice patiently and carefully, word by word, to focus on attention, stable mood, slow speaking rhythm, first from the simple word, word practice.Encouraging patients to talk boldly to people, is also a way of language exercise.3. Functional exercise: sitting and lying practice: the family members help the patient to sit up and lie down repeatedly; or tie a rope at the foot of the bed to let the patient hold the rope with healthy hands.Upper limb exercise: often presses the affected limb, then make abduction adduction and elbow flexion, internal and external rotation movement.Lower limb exercise: the patient prone, family members with the back of the hand on both sides of the spine from top to bottom, so repeated several times.Also can let the patient sit on the stool, the limb step on the bamboo tube to roll back and forth or walk, help the patient up and down the stairs practice can also promote the function improvement.Four, control blood pressure, prevent bleeding again: cerebral hemorrhage patients recovery regularly checks blood pressure, keep blood pressure around 18/11.5Kpa, take antihypertensive drugs, not arrest and change, also should not take a variety of antihypertensive drugs, avoid blood pressure or low brain blood supply, quit tobacco and alcohol, overwork, avoid strong mental stimulation, so as not to make blood pressure surge and life-threatening.

1.3 OBSERVATION INDICATORS

(1) According to the preoperative visit anxiety self-assessment scale (Self-Rating Anxiety Scale, SAS)[1]And Depression Self-assessment Scale (Self-rating depression scale, SDS)[2]To evaluate the degree of anxiety and depression after the nursing period, the SAS score criteria included: mild anxiety at 50-59, moderate anxiety at 60-69, and severe anxiety at> 69.SDS scores: depressive symptoms: 50; mild depression: 50-59; moderate depression: 60-69; major depression: 70.The score results were negatively correlated with the nursing effect.

(2) Quality of life before and after intervention: the health survey (the MOs 36-item short from health survey, SF-36), from the recovery of social function, body function, body function, language function, life ability, the higher the quality of life; the comparison test group is better than the reference group, the difference has statistical significance (P <0.05)

(3) Judge the total nursing satisfaction of the two groups according to the self-made satisfaction questionnaire of our hospital, full score: 100 points, satisfaction: 90 points; general satisfaction: 70-89 points; dissatisfaction: 69 points.

1.4 STATISTICAL TREATMENT

The obtained data were analyzed by SPSS22.0 statistical software. The measurement data is expressed as ($\pm$ s), t-test, with P <0.05. $\bar{\chi}$

2. RESULTS

2.1 SAS AND SDS SCORE

The SAS and SDS scores in the test group were lower than the reference group, P <0.05, shown in Table 1.

Table 1 Comparison of SAS and SDS scores between the two groups (points, $\pm$ s) $\bar{\chi}$

group	n	SAS		SDS	
		Before nursing	After nursing	Before nursing	After nursing
anchoring group	450	58.24±5.29	48.26±4.24	50.27±5.20	58.62±5.26
test team	450	58.28±5.52	38.21±3.22	50.62±5.21	40.21±4.84
t	-	0.111	40.043	1.009	54.636
P	-	P >0.05	P <0.05	P >0.05	P <0.05

Table 2 Comparison of the SAS scores of the two groups (x soil s)

group	Example number	Before the intervention	After the intervention	Before, and after the intervention	
anchoring group	450	53.84±3.26	48.89±2.99	53.80±3.14	48.28±2.69
test team	450	54.05±3.21	52.39±4.02	53.70±3.18	53.08±3.98
t	-	0.97	14.82	0.48	21.20
P	-	P >0.05	P <0.05	P >0.05	P <0.05

2.2 PATIENT SATISFACTION

The satisfaction rate of the test group (95.11%) was higher than that of the reference group (88.00%), with P <0.05, as shown in Table 3.

Table 3 compares the total satisfaction with (%) between the two groups

group	n	satisfied	General satisfaction	discontent	total satisfaction rate
anchoring group	450	221	175	54	396 (88.00)
test team	450	230	198	22	428 (95.11)
χ^2	-	-	-	-	14.716
P	-	-	-	-	P ＜0.05

3. DISCUSSION

According to the clinical investigation, the clinical analysis of the effective postoperative care effect of HICH peripatients can effectively promote their functional recovery and improve their quality of life[4]. Therefore, clinically, additional continuous, individual and systematic nursing intervention is needed to help patients gradually change from passive movement to active movement and lay a foundation for the recovery of limb function.

The effect of accelerated postoperative rehabilitation nursing mainly refers to a series of nursing measures conducted around patients during surgery, quality of life before and after the intervention: recovery of body function, language function and life ability, eating habits and other conditions, by checking patient information, transport safety management and other aspects, can effectively prevent the occurrence of the wrong patients and adverse and patients bump or fall and other adverse events; preoperative inventory and examination of medical instruments and machine performance, Can avoid delaying the operation process due to insufficient instruments or performance errors; Proper and comfortable surgical position for patients, Can effectively prevent patients from developing bedsore or other skin lesions and other symptoms.The whole nursing process strictly requires the nursing staff to operate according to the aseptic principle, which can avoid the intraoperative or postoperative incision infection or other inflammatory infection, and provide a certain safety guarantee for the surgical treatment.Postoperative rehabilitation [5] patients with cerebral hemorrhage should be treated as soon as possible after their disease stability, which is beneficial to restore neurological function and improve the quality of life.If the patient has depression, timely medication and psychological support.Diet should be light, easily digestible and high vitamin content, eat more cabbages, radish and other crude fiber food, keep stool bunostructed; avoid fat and sweet, quit smoking alcohol.Discharge guidance: Give discharge guidance and health education guidance books, develop good healthy living habits of following medical advice after discharge, call telephone visits, push relevant knowledge through hospital public account, strengthen the health knowledge of family members and patients; and adjust intervention measures and guidance according to the specific situation of patients.Effective perioperative care and rehabilitation care of HICH patients can their treatment and postoperative care.The main nursing goal is to help patients shorten the postoperative nursing time after hypertensive intracerebral hemorrhage, to relieve postoperative anxiety and depression, using the (S AS) anxiety self-assessment form and depression self-assessment scale (SDS) score, to simultaneously reduce or reduce the postoperative stress response and complication rate, Applied Health Survey Summary Form (the mos 36-item short from health survey, SF-36) for evaluation, in order to improve the quality of life, body function, language function, life ability recovery and can reduce the occurrence of complications.Accelerating postoperative implementation of nursing intervention to promote patients has a remarkable effect and has definite application value.The results of this study showed that the SAS and SDS scores were lower than the reference group, and the care satisfaction was higher than the reference group, with $p < 0.05$. Applied health survey (the MOs 36-item short from health survey, SF-36), from the social function, body function, body function, language function, life ability recovery analysis, comparing the test group is better than statistical than reference group, difference has statistical significance ($p<0.05$) further confirmed that accelerated postoperative nursing effect is better than traditional nursing, through perioperative quality for quality nursing patients for nursing for patients to avoid the foundation, to avoid unnecessary adverse reactions.

4. CONCLUSION

In conclusion, accelerating the application of postoperative nursing effect in HICH can improve the negative emotions caused by surgery, effectively improve patients' service satisfaction with nursing staff, improve their quality of life, body function, language function and life ability recovery, and reduce the occurrence of complications.Accelerating postoperative implementation of nursing intervention to promote patients has a remarkable effect and has definite application value.Worth of application and promotion.

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Research on Kazakh Medicine Heritage Education Status and Countermeasures

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Abstract: Since the reform and opening up, with the strong support of the party and government, Kazakh pharmaceutical industry in our region has made vigorous development. Kazakh medicine is an important part of traditional ethnic medicine. In order to solve the outstanding problems in the process of its inheritance, the author combined with some important literature and practical exploration to inherit Kazakh medicine.
Key words: Ethnic Medicine; Kazakh medicine; Heritage

INTRODUCTION

Traditional Chinese medicine culture is an important part of the fine traditional Chinese culture. It is the precious material and spiritual wealth of the Chinese nation to understand life, maintain health, and prevent and treat diseases for thousands of years. Kazak has a long history and national culture, Kazakh medicine is also part of the Chinese national medicine medicine treasure, in the long-term precipitation and development, combined with the local natural environment characteristics and humanities, physical characteristics, etc., gradually formed a unique basic theory, characteristic of Chinese medicine, diagnosis and treatment, etc., but how to better ha medicine in the health cause of the Chinese nation, need to understand the current situation and put forward corresponding countermeasures, need in the support of the country and the party, need the joint efforts of all kinds of talents at all levels.

1. CURRENT SITUATION OF KAZAKH MEDICINE INHERITANCE

In recent years, Kazak medicine has made steady development in various regions of Xinjiang. Kazakh medical and scientific research institutions such as Yili Kazakh Medical Research Institute, Altay Kazakh Medical Research Institute and Altay Health School have been established in various parts of Xinjiang. Kazakh medical researchers summarized the pharmaceutical ancient books Qiak Bayan, published the Kazakh basic theory of medicine, introduction to Kazakh medicine and other related books, compiled the Talg, Kazakh medical diagnosis, hold Tlek and other Kazakh medicine teaching materials. According to ancient books, documents and traditional treatment methods, books such as The Kazakh Medical Prescription Collection and The Common Medicinal Materials in Kazakh Medicine have been published. In December 2013, the National Health and Family Planning Commission took Altay as a pilot Kazakh medical physician qualification examination, and the following year, Kazakh medicine was included in the national intangible cultural heritage.

Since the reform and opening up, after the unremitting efforts of Kazakh medicine workers, Kazakh medicine has collected hundreds of traditional prescription, such as the Kazakh capsule, coze muke granules, tasmayi extract and a batch of exact Kazakh medicine, and as a prescription drug in clinical use, part of the Kazakh medicine material approved document number to generate and applied for the national invention patent. In short, with the strong support of the Party and the government, Kazakh medicine has made contributions to maintaining the health of the people, and has effectively promoted the stable economic and social development of Xinjiang. The inheritance of Kazakh medicine is of great and far-reaching significance for serving the social stability and long-term stability of Xinjiang. However, at present, the research level and development intensity of Kazakh medicine in our district are still very weak, the research methods are not standardized enough, and the overall development status still needs to be improved. The following issues that should be paid attention to in the process of the inheritance of Kazakh medicine are discussed.

2. KAZAKH MEDICINE INHERITANCE COUNTERMEASURES

2.1 GIVE POLICY SUPPORT AND INCREASE CAPITAL INPUT

Whether the medical administration and the government of ethnic minority areas attach importance to ethnic medicine is the key factor related to the inheritance and development of ethnic medicine. At present, the state and the autonomous region attach great importance to the development of Kazakh medicine, and the regional finance allocates special funds for Kazakh medicine every year, which provides a fundamental guarantee for the protective development of Kazakh medicine in Altay, Yili, Tacheng and other regions, and realizes the experimental planting of medicinal materials and large-scale industrial production. However, the current development of Kazakh medicine in our

district lacks a perfect management system, which limits the development of Kazakh medicine. Therefore, the government should issue corresponding laws and regulations, improve the inheritance and protection policies of Kazakh medicine, strengthen the support of special research and development funds, and truly achieve the popularization of Kazakh medicine, so that it can develop and play a role in an equal social environment.

2.2 CULTIVATE HIGH-END TALENTS OF KAZAKH MEDICINE

Over the years, Kazakh medicine has been passed on with the traditional mode of mentoring and family members, which has brought adverse effects to the current research and development of Kazakh medicine. Although the Party and the government have issued many policies and adopted corresponding measures and measures, there is still a serious lack of high-end talents. At present, the number of high-end Kazakh medical talents, especially the doctoral level talents, is quite small, and the lack of high-level and highly educated Kazakh medical talents is very short. The lack of high-level talents will make some traditional and valuable ethnic medicine knowledge and characteristic diagnosis and treatment technology methods face the crisis of loss. The inheritance and development of Kazakh medicine should also fully draw lessons from other relatively mature disciplines, such as western medicine, traditional Chinese medicine, etc., and should also strengthen the exchanges and cooperation with the excellent foreign medical culture. By learning from the successful research experience of other disciplines and learning from each other, the high-level Kazakh medical talents have promoted the diversity of Kazakh medicine research means, and provided an important guarantee for the improvement and acceleration of the development of the inheritance work of Kazakh medicine.

2.3 REFORM THE CONSTRUCTION OF MEDICAL RESEARCH AND EDUCATIONAL INSTITUTIONS IN KAZAKHSTAN

At present, there are some problems in Kazakh medical research institutions and educational institutions, such as small school scale, low enrollment level, lack of funds and lack of teachers in our district. To the existing resources, such as the research, education institutions of human, material, financial resources, etc, set up a director of Kazak medical university, so not only save Xinjiang scientific research, education institutions construction and buy repeated equipment funds, and is conducive to the lack of development of Kazak medical education conditions of county, township and other talent training.

2.4 UPPER AND LOWER LINKAGE TO IMPROVE THE LEVEL OF KAZAKH MEDICAL RESEARCH

In the development process of Harbin medicine, many diagnosis and treatment methods often used by folk doctors lack of modern scientific research and vouchers, coupled with the competition of modern medicine, resulting in many young patients are reluctant to choose Harbin medicine treatment methods. Therefore, while effectively protecting the traditional Harbin medicine resources, it should also strengthen its standardized and scientific research. Local scientific research institutes and grass-roots Harbin medical workers should coordinate and promote each other to strengthen communication and exchanges.

3 CONCLUSION

The Kazakh medicine is not only the precipitation and accumulation of the Kazakh disease prevention and treatment for thousands of years, but also the medical science gradually developed through scientific practice in recent years. It is an important part of the Kazakh national culture. At present, Kazakh medicine is playing an increasingly important role in fully protecting the health of the people of all ethnic groups in Xinjiang. We should make concerted efforts to accelerate the inheritance and development of Kazakh medicine in all regions of Xinjiang, so that it can find a distinctive and high-quality path of inheritance and development.

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Humorous Story Fantastic Legend-on"Legend of Sleepy Hollow" by Washington Irving

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Abstract: "Legend of Sleepy Hollow" in the Sketch Book" by Washington Irving is one of his famous short stories. The story contains all of the elements required in modern short stories. The story describes with its light touch on the customs and habits of American people after the founding of the country. The author narrates Ichabod Crane's funny experiences against the headless horseman and his final failure. The protagonist's characteristics are shown through sharp conflicts. The typical living mountain village of Holland immigrants forms the typical living circumstance. Through all these the author shows us a vivid American country picture. Its humorous language and excellent writing skill give us deep impressions.
Keywords: sharp conflict circumstance; humorous language; and writing skill

Washington Irving was born into a wealthy New York merchant family. From a very early age he began to read widely and loved literature. Later he studied law and led for a time the leisurely life of a gentleman lawyer, but he loved writing more. At the age of thirty-two, he went to London to take care of his family business there. Although the business failed, the experiences in Europe provided with rich material for his literary creation. In his lifetime he wrote a large number of poems, essays and biographies. His five-volume life of Washington is regarded as the great work to study the founder of the United States. However, in my opinion, his short stories are among the best worth studying by us, especially two stories in his Sketch Book: Rip Van Wincle and Legend of Sleepy Hollow. He made stories as a literary form appearing in American literature. It was because of him that American short stories began to develop and that we have Howthorne, Melville, Allan Poe and other romantic short story masters.

1. "Legend of Sleepy Hollow" is one of the excellent stories in "The Sketch Book". Ichabod Crane was a young man grown up in Connecticut. He came to a small mountain village near Hudson River to be a schoolmaster. There he fell in love with Katrina, the daughter and only child of a substantial Dutch farmer. Crane knew that there were full of difficulties in his way of love suit, for he had to face the local young guy, the furious strong Brom. Both of them loved the beautiful and coquettish Katrina. It was only Crane who dared to compete with Brom. Under the cover of the singing-master, he made his frequent visit at the farmhouse…and walk with her by the side of the spring under the great elm, or sauntering along in the twilight." However, he became the opponent of Brom Bones who always made trouble and let Crane be shameful in front of the girls after he failed to make open duel with him. At last, he drove Crane away from the Sleepy Hollow in taking use of Crane's superstitious psychology.

2. The story created about 200 years ago has different elements that the modern excellent stories should posses. First of all, the characters in the story have got fresh characteristics. In describing the main character Crane, the author wrote:" He was tall, but exceedingly lank, with narrow shoulders, long arms and legs, hands that dangled a mile out of his sleeves, feet that might have served for shovels and his whole frame most loosely hung together. His head was small, and flat at top, with huge ears, large green glassy eyes, and a long snipe nose, so that it looked like a weather-cock, perched upon his spindle neck, to tell which way the wind blew. To see him striding along the profile of a hill on a windy day, with his clothes bagging and fluttering about him, one might have mistaken him for the genius of famine descending upon the earth, or some scarecrow eloped from a cornfield"[1]. In describing his nature the author wrote: "he was in form and spirit like a supple-jack-yielding, but tough, though he bent, he never broke, and though he bowed beneath the lightest pressure, yet the moment it was away-jerk! He was as erect, and carried his head as high as ever"[2]. With these descriptions, the author presents in front of us a picture of Dan Quito. Judging from his appearance and nature we can see he must be a comic person and would probably have a tragic ending, because he had to face a local guy who was regarded a hero by the local people as he was physically strong and was good at riding and appearing in different kinds of
public scenes. His appearance would mean the coming of the judges. When he knew that he and Crane fell in love with the same girl Katrina, he adopted the tactic of making concessions in order to gain advantages. Though his horse didn't appear in old Van Tassel's stable, the duel between two men could hardly be avoided. It was because of Crane's cleverness that Brom didn't get the chance. However, the troubles came to him one after another. The final competition between Crane and headless horseman

was planned by Brom. This description made up two vivid characters.

What moved the readers is that the author put the main character in the sharp conflicts. The conflicts are the soul of the stories. In the story we find the conflict between Crane and the community; the conflict between Crane and Katrina; the conflict between Crane and Brom and the inner conflict of the main character within himself. Ichabod left his hometown to be a schoolmaster in the mountain village. Because of the lack of the communication, its social circumstance and living habits and customs remain constant. It is the community of self-sufficiency. So the profession of teaching was regarded as reaping the fruits of other people's toil and their pay was rather low. In order to be accepted by them, Ichabod did his best from helping the folklore cut the grass, feed the cattle to looking after the children and teaching the girls sing psalms, telling them what he had red from books about explanation to different natural phenomena and ghost stories. Thus he was gradually accepted by them and won the love of the girls and housewives. His love towards Katrina was not only because of his beauty, but her rich life. As the only inheritor of old Van Tassel's property, Katrina was " a blooming lass of fresh eighteen, plump as a partridge; ripe and melting and rosy checked as one of her father's peaches"[3]. Her coquettish behavior attracted numbers of local young guys to dream of becoming her bridegroom. It was just because his knowledge and unyielding nature that our hero could win over others. Under the cover of teaching girls sing psalms, he made himself appear in Katrina's courtyard; accompanied her along the streams under the moonlight. However, a girl lived in the village couldn't get away from her living circumstance, she was not the girl as Inhabit dreamed to be who someday in the future could marry him and raise a group of children for him, then they would sell all the property and ride his dragon to join in the people of pioneers marching towards ideal frontier. The truth was that not long after his defeat and disappearance, Katrina was married to the local strong man Broom and Cabot's dream became visionary hope. It was among the series of conflicts that the story developed.

3. Its coherent circumstance was an important factor that attracts readers. The story takes place in a small mountain village called "Sleepy Hollow" near Hudson River. Here lived the descendants of Ditches. Different from most immigrants, they lived here for years and kept the customs and habits of Dutch's. The stillness of the valley and not much influence outside made the author think that "if ever I should retreat, whither I might steal from the world and its distractions, and dream quietly away the remnant of a troubled life, I know of none more promising than this little valley"[4]. Such a quiet place made ghost stories to be accepted as truth. The local people believed that the dominant spirit that heats this enchanted region is the apparition of a headless horseman. Our hero, Ichabod liked to read ghost stories and tried to believe them. So he was much influenced by the superstition here. Every night when he came back home from the student's family where he was sent to have his dinner and walked on the mountain lane to his school house, the ghost stories he had heard agreed with the surrounding circumstance: the grass, the trees, a sound and even a movement would make him terrified and shivered.

As the villagers where Ichabod teaches lived a self-sufficient life, they thought that sending their children to school was an extra burden. They regarded schoolmasters as mere drones. In order to stay in such circumstance and be accepted by them, Ichabod made his efforts. It wrote in the story: " He assisted the farmers occasionally in the lighter labours of their farms, helped to make hay; mended the fences; took the horses to water; drove the cows from pasture; and cut wood for the winter fire. He laid aside, too, all the dominant dignity and absolute sway with which he lorded it in his little empire, the school, and because wonderfully gentle and ingratiating. He found favour in eyes of the mothers, by petting the children, particularly the youngest; and like the lion bold, which whilom so magnanimously the lamb did hold, he would sit with a child on one knee, and rock a cradle with his foot for whole hours together"[5]. It was after efforts that he gained a firm foothold in the village. But his bad luck was his l9ve to rich Katrina and he must meet his opponent strong Brom. Although he believed that he had the knowledge and unyielding will and he was marching towards success, he was quite disappointed after he attended the merry-making and came back from the house of Katrina. It was jus midnight, the real hour that ghosts would appear. His superstitions grew as he rode along the mountain lane. When he saw that in front of him was the heedless horseman, his fear came to the climax. He believed that he was really beaten down by the ghost. The situation forced him to leave the place and his leaving added a new topic of ghost story. Just as Zhang Chong says: "The coherence of nature and man is obvious in Irving's Legend of Sleepy Hollow. The dream like nature gives the story a mythic colour"[6].

4. On the aspect of writing style, Irving was mature. The author uses suspense to raise the reader's interest. What is the result of his love suit. When we thought he was going to succeed the trouble came. Which ghost would Ichabod meet on the midnight journey? What is about his duel with the headless horseman? All these not only made the character fell nervous and terrified but the readers feel intense as well.

The humorous tone of the story also interests readers. When the main character appears, we saw a hero of Dan Quito. The picture that Ichabod made himself up and rode one blind tempered horse to attend the

country merry-making he was exactly like Dan Quito's riding towards Dutch windmill. Ichabod lived in allusion. When he saw old Van Tassel's rich farm, he dreamed that someday he would inherit all these property and then sold them and rode toward the new frontier with Katrina and a group of their children. When he saw ducks and chickens of old Van Tassel, a rich banquet of chicken and ducks were waiting for him to enjoy.

There are a lot comparison used in the story to add the vividness. Ichabod and Brom were the opponents. One was thin and weak as the genius of famine descending upon the earth, the other was very strong and fearful; one thought he was an intellectual man, the other was the local hero in the dispute. So their competition based on the unjust or unproportional conditions from the very beginning, even the horses they rode-the fighting tools were not on the equal level, which decided that Ichabod doomed to be defeated in the fight.

As the first American writer to win international fame, Irving was often regarded as "father of American literature". To reread his stories, we couldn't help cheering for his skillful writing and moving by his story. Zhang Chong once pointed out "Its fluent words, excellent description, vivid plot and impressive characters made them become famous works in the literature of the world" [7].

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The Dilemma and Response of Personal Data Privacy Protection in the Era of Intelligent Media

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Abstract: With the introduction of EU GDPR and the implementation of CCPA (California Consumer Privacy Protection Act) in 2020), the issue of personal data privacy protection has once again attracted global attention.Combined with the current intelligent media environment, this paper describes the new data protection ecology constructed by the Internet, intelligent media and 5G technology; analyzes the dilemma of personal data privacy protection: fuzzy power boundary, data abuse and malignant use of data platform, multiple channels of data privacy infringement; and gives localization thinking from the government, industry and individuals.
Key words: Smart media; data privacy; GDPR

INTRODUCTION

In recent years, in January 2019 for violating GDPR in France; In July 2019, the Office of the Information Commissioner (ICO) fined Google 183 million and 99.2 million, respectively, in July 2019, and Cambridge Analytica was exposed in 2018 to "get users".

The current global data privacy protection regulations mainly include the EU General Data Protection Regulation (GDPR), California's Consumer Privacy Law (CCPA), Brazil's General Data Protection Law (LGPD) and other strong privacy regulations, both of which will come into effect in 2020 (January and February).After a year of preparation, India has introduced the latest Personal Data Protection Act 2019 in late 19. Although the logical framework is not difficult to see the figure of GDPR, some of them have introduced concepts such as cross-border data transmission that combine the actual conditions of the country.

As more and more countries place strong regulatory demands for data privacy, global companies will also invest significant compliance costs for control.For China, it will inevitably bring about the user awareness, industry regulation, data protection legislation and other aspects of multi-dimensional impact and challenges.

1. THE NEW ECOLOGY OF DATA PROTECTION IN THE ERA OF INTELLIGENT MEDIA

1.1 THE DEVELOPMENT OF THE INTERNET PROMOTES PERSONAL DATA PROTECTION

On February 25,2022, The China Internet Network Information Center (CNNIC) released the 49th Statistical Report on China's Internet Development in Beijing. As of December 2021, the number of Internet users in The report had reached 1.032 billion, up 42.96 million from December 2020, and the Internet penetration rate had reached 73.0 percent.[i]Internet technology has brought huge traffic, but also inevitably facing data mining, processing, application and data protection and many other problems, -personal data protection has emerged.

On November 1,2021, China's-Law of China's Personal Information Protection Law, came into effect. The introduction of the law is a security lock for personal information; on March 6,2020, the State Administration for Market Regulation led the new Personal Information Security Code, which made detailed provisions on the collection, storage and use of personal information, aiming to protect the legitimate rights and interests of personal privacy. At the same time, the EU General Data Protection Regulations, officially implemented on May 25,2018, also has an accurate definition in "personal data": "personal data" refers to the information related to any identified or recognizable natural person (the "information subject"); a recognizable natural person refers to one or directly or indirectly identified person, mainly referring to the name, ID number, location information and other identity identification.

The famous paper, published in the Harvard Law Review, states that " Our constitutional founders promise the conditions of happiness... they give citizens, like the right not to have government interference, the most extensive right and the most cherished right of modern civilization."With the advent of Internet technology driving globalization, personal privacy protection has gained more and more legal attention, among which data privacy has also become extremely important.As Zhou Hongyi said, "Only a safe Internet is a beautiful Internet."

1.2 INTELLIGENT MEDIA EXPANDS THE SCOPE OF DATA PRIVACY

Schenberg, known as the "first person to use big data in business", discussed privacy protection in the Age of Big Data: the ubiquitous data collection devices will expose everyone to the database, and privacy

protection becomes more difficult.Intelligent media use data technology to further expand the category of data privacy, the algorithm recommendation is also based on the typical application: "little red book""sina weibo" APP through extensive search for personal information, accurate tracing the user portrait, pop-up push window may be "shoes" of "jewelry" jewelry "beauty" and so on, online shopping, takeout and tourism industries also through the algorithm to accurate customization.

At the same time, intelligent technology continuously puts drones, intelligent sensing and speech recognition into communication practice. Whether it is 360-degree panoramic shooting or the extraction of face, sound, pulse, motion index and other physiological characteristics have greatly expanded the scope of current data privacy protection.Amazon's "echo" smart speaker, Flytek's voice recognition system to Xinhua sensor News, our privacy guidelines also establish with the deepening of smart media platform in data capture and change.As the boundary between the possibility of using media technology to provide convenience and steal user information is gradually blurred, the discussion of personal data privacy protection will certainly be put on the agenda.

3.5G COMMERCIALIZATION SPEEDS UP PERSONAL DATA TRANSMISSION

On June 6,2019, the Ministry of Industry and Information Technology officially issued 5G commercial licenses to the four major operators, including China Telecom and China Mobile,, officially entering the first year of 5G commercial licenses in China. In 2019, China Mobile will build more than 50,000 base stations, covering more than 50 cities, and will further expand its coverage in 2021. According to a survey report conducted by IResearch Consulting in December 019,57.2% of users know or know very well about 5G, and 87.1% believe that 5G will have a big or great impact on their lives.Among them, the cultural entertainment, smart home, VR, smart medical care, smart transportation and industrial Internet under the support of 5G will greatly meet people's yearning for a better digital life. The upload and download delay is almost no, which also poses a great challenge for the positioning and tracking of data protection.

The United States has realized information industrialization since the 1980s, and is a veritable cyber security power. In 20 15, the Department of Defense issued a revised Cyberspace Action Strategy; the Cyberspace National Action Plan (CNAP) in 2016; and the Strengthening cyber Security of the Federal Network and Key Infrastructure in May 2017 echoed the US National Security Strategy Report issued at the end of 2017, considering the federal government as the entire enterprise and listing specific measures to enhance cyber security. The California Consumer Privacy Act (CCPA) of 2018 has boosted personal information protection.

These tough security measures are firmly tied to rapid communications technology: $8 billion was invested in 1980 and $25 billion was invested in 1994. Since then, it has increased year by year, with an annual increase rate of around 18%. Although the rapid development of the blue ocean of information has accelerated the data transmission, but "5G" when the "super-wide connection" consumes hundreds of millions of users of various information, privacy rights are difficult to be effectively protected.In 2018, the U. S. government repeatedly banned local carriers from selling Huawei phones for security. One important reason is that Huawei's adapted 5G networks are likely to threaten their data security. With the help of 5G, personal information transmission still plays its "high rate and low latency" characteristics: even if the information is deleted in the original address, it is still possible to be reproduced and shared first.

It can be seen that with the continuous development of cloud computing, the Internet of Things, big data and artificial intelligence, the scenario-based communication with users' personal data as the core will continue to deepen and expand.Intelligent media technology and the user's personal data will become the situation of "interlinked", which is the premise of personal data protection information in the information environment.

2. THE CURRENT DILEMMA OF DATA PRIVACY PROTECTION

2.1 THE POWER BOUNDARY OF THE DATA PLATFORM IS BLURRED

In June 2019, Tencent sued TikTok, the main dispute is the conflict between the platform data rights and the right to carry personal data. The latter two belong to ByteDance products. TikTok provides the personal information (wechat, QQ) authorized login service provided by Tencent to the TikTok APP to the multi-flash APP to attract users for new applications and expand the relationship network. Tencent believes that this act infringes users' personal information, violates the management regulations of Tencent platform, and constitutes unfair competition; TikTok said that multi-flash APP has no right to delete personal data such as profiles and nicknames synchronized from other accounts to multi-flash without user consent, so the behavior is reasonable.

The case of orders in response to the two issues, the first platform data shall belong to commercial resources, the second is the court recognized tencent in the platform agreement and user data rights related to management rights and interests, but the platform whether excessive abuse user privacy, infringement of personal data portable, did not give the answer. It can be seen that the fuzzy power boundary of the data platform is a major barrier to data protection. Similarly, once the G D stringent GDPR General Data Protection Regulations took effect in May 2018,

Facebook and other giant platforms relying on a large number of user data quickly received sky-high fines.The regulations clearly require that data controllers are responsible for providing appropriate personal data protection technologies and organizational management measures, accountability for personal data processing, and responsibility for violations.

The core of GDPR is the collection and use of personal data, and the boundaries of platform data rights: individual organizations and media platforms must be approved by readers or users when collecting data, and the platform or enterprises can violate the relevant requirements at a maximum of 20 million euros or 4% of the previous year's global revenue. A large number of large-volume data platforms have already combed out the existing data to ensure that this information is all obtained through the legal channels that users agree to.

2.2 DATA ABUSE AND MALIGNANT USE

Big data analysis, robot writing and drone reporting of intelligent media applications can indeed help improve the efficiency of information production and release traditional industries from redundant manual operations. However, due to the lack of speculation and creativity limitations of the current intelligent technology, this brings a series of information abuse and malignant use problems.

"A Tale of Two Cities" says that "This is the best and the worst of times."In 2018, IBM Security released a data leakage survey report covering 419 companies worldwide, finding that the global cost of data leakage decreased, with the average cost down by 10% and the cost per capita down by 9%; and the average scale of data leakage (the number of lost or stolen) increased by 1.8%.It can be seen that "technology carnival" can easily lead to "technology worship", that is, the excessive pursuit of economic interests and ignoring the hidden dangers brought by poor data management.

As Marcuse said, "" Science and technology is both productivity and ideology. " What we perceive today is that the logic of technology has transformed into the logic of slavery, whether you should see this video or not, whether this news is a public issue, will be pushed to your faint light screen.Once you acquiesce in the "privacy for convenience" rule, users do not even need to pay any fees for "considerate" big data services.But every time you enjoy a free lunch and a convenient service, is even more precious than money.

2.3 MULTIPLE CHANNELS OF DATA PRIVACY INFRINGEMENT

In November 2018, China Consumer Association reported the evaluation of personal information collection and privacy policies in Beijing, involving 10 categories in news agency delivery, video broadcasting, online shopping, transaction payment and other industries. Among 100 APP, 59 App are suspected of excessively collecting "location information"; 23 App are suspected of excessively collecting "identity information".The main problems of the rectification mostly focus on the platform's failure to clearly inform the users of the type and purpose of the personal information collected, the storage period and the suspension of operation, and the failure to obtain the consent of the users when providing the personal information externally. It can be seen that, with the maturity of technology, the channel diversification and subject generalization of data privacy infringement gradually show traces.

"Care about your privacy" is apple early slogan, because technology companies and their users are very clear: too many business scenarios will produce directly related to individual users core sensitive data, and the data collection, storage and analysis for business intelligence decision-making value at the same time, data privacy infringement channels also in synchronous synchronization.For example, the domestic AI face changing software "ZAO" exploded on social media overnight. It mainly uses AI technology to replace users' faces with classic movie scenes or famous movie stars. In a short period of time, the downloads of the entertainment APP soared in the Apple store to the first place. However, in only one day, it went from brush screen to falling from the altar, and the doubts raised the privacy infringement of AI face change and the platform's dissatisfaction with the lack of user privacy and related information protection in the process of communication. Users finally realized that-facial data is also an important part of personal privacy.

The CCPA California Consumer Privacy Act (effective January 1,2020), which was signed on June 28,2018, states that the right to data privacy is an inalienable right in the California Constitution. As the number of personal data shared by consumers and businesses surges, the data privacy infringement channel will further expand.

3. THE LOCALIZATION STRATEGY OF DATA PRIVACY PROTECTION IN CHINA

3.1 SYSTEM LEVEL: TO BUILD A PRIVACY FIREWALL WITH LEGISLATION

From the big data algorithm of "Toutiao" and "A Little Information" to the AI synthesis of Xinhua News Agency and "ZAO", we can see that technology is not only an important driving force for the media industry, but also gives infinite graceful imagination to politics, economy and culture. Most are of course fans of the technology-neutral theory, as we have seen home-school collaboration from the Internet; fans have a tiny vision of becoming famous for 15 minutes than the convenience of large, intelligent platform media.

Is that really the case?certainly not. Teacher Peng Zengjun said in "Journalism Redemption" that "Wearing new shoes should follow the old road". When all communication behaviors are socialized,

the harm of evil will reach unprecedented depth and breadth. The issue of "privacy right" is commonplace, but data privacy protection has not yet had a clear legal and ethical constraints in China. Once the control is not good, it is very likely to bring hidden dangers to the society and the public driven by commercial purposes.Therefore, it is the most urgent requirement to build a privacy firewall at the institutional level.

In August 2016, the Mobile Internet of Things Application Information Service Management regulations were implemented, mainly covers personal information protection requirements, strengthen the crackdown on network fraud; in June 2017, the People's Republic of China Network Security Law again defines user information protection, network security emergency and monitoring and other fields; in May 2018, the national standard, abuse and leakage of the illegal collection of personal information, clarified the obligations of personal information controllers in the collection, preservation, use, sharing and transfer of the processing link. Such stringent rules focus on data protection for individual users, and, on the other hand, aim to motivate technology companies to " dance with chains.Careful use of user data and data analysis with the smallest possible data samples should be the meaning of complex laws. In the future, with the further enhancement of user awareness of data protection, there should be more standardized and scientific standards for the collection of personal information data.

3.2 INDUSTRY LEVEL: PRUDENT USE OF PLATFORM DATA RIGHTS

In 2018, VIVO introduced vivo NEX, a lift camera, to match the full screen, but when users get the phone, they find that the camera rises even if they don't use the phone. Vivo's explanation is that some mobile apps have access to the camera, which means that some platform software can use the camera as a means of user data extraction or reference without the user's knowledge. Facebook, a platform giant, leaked personal information during the 2016 US presidential election and was analytically used to affect the election results and push the production and spread of fake news to an order of magnitude.

It can be seen that although the platform media has large technology, large volume and many users, it has frequent problems in the use of data technology.On September 1,2017, the National Internet Advertising Monitoring Center was officially launched. At present, it has realized the monitoring of 1,004 key websites and 4 advertising alliances and e-commerce platforms in 46 sub-provincial administrative divisions. The illegal rate of Internet advertising has dropped from 7.1% before the monitoring to 1.98%.In addition, finance and other industries are also increasing personal data control.In February 2020, the Central Bank issued the Technical Specification for the Protection of Personal Financial Information, which divides personal information into C3, C2 and C1 into various account passwords; account and ID information, registration time, payment mark information, and stipulates the security protection requirements for data information in collection, transmission, use, deletion and other life cycle.

Industry self-discipline is not a vague concept. The prudent use of data management power requires an effective balance between enterprise development and data protection.On the one hand, it should assume the responsibility of shaping a clear and orderly Internet space. On the other hand, it is also necessary to cooperate with users to deal with the possible problems in data privacy protection.

3.3 USER LEVEL: INDIVIDUALS HAVE THE "RIGHT TO CARRY DATA"

From the domestic environment, in China, large media platforms such as Sina, Baidu, Tencent, to sign a "user notice" before using products, few patient comb; "Meituan", "hungry?" APP deep "eavesdropping" cloud; 315 party exposed AI harassment calls 4 billion times a year.We rarely protect our privacy by reading complete privacy terms, clearing Internet records, turning off the location tracking function of smart devices and other on. To enjoy a more convenient digital product or service experience, people often choose to disclose their personal data.

For the first time, the European Union has used the term personal "data portable right" in the GDPR, which means that users can freely choose when and where to whom to collect and use the data. This is rooted in the concept of data self-determination, which, to some extent, improves the traditional concept of data privacy and helps users to clarify their own data rights and interests.According to a February 2020 survey, 65.3 percent of respondents believe that reading call records is a privacy infringement, and 55.4 percent of respondents do so.It is an inevitable trend that the fuzzy zone in the boundary between platform and individuals, and technology and privacy is clear in the enhancement of users' awareness of data and information protection.

In the face of future ubiquitous information collection devices, users need to keep as alert as possible, encounter bad reputation rogue software for information, must give priority to whether the behavior is worth it; can even try different password combinations when registering online accounts, especially those with security issues.Admittedly, it is difficult and costly for network users to protect their rights, but Hangzhou, Beijing and other places have invested in it has taken a first step in the protection of personal data and network privacy.

CONCLUSION

The year 2021 is a period when China is deeply involved in the construction of the global cyberspace

order. Especially in the recent prevention and control of COVID-19, the collection and confidentiality of personal data and information has once again received much attention.Neil Botzmann said in The Technology Monopoly: Technology will flood the information and make the traditional world view disappear invisible and invisible.In the face of the following new trends of The Times, thinking about the relationship between people and technology is a problem that we must face.

Further, the arrival of the era of intelligent media has brought considerable pain points and challenges to the protection of personal data privacy, but the new technology moving forward with great force will inevitably accelerate the realization of a wider and common scenario-based dissemination of personal data. Therefore, the future for the series of personal information data protection will be more strict and scientific, from data ownership, access to apply boundary redefined, can truly on the premise of protecting personal privacy power technology innovation, data potential efficiency, make the general law of the general law in article 111 "natural person personal information is protected by law" provisions to truly practice.

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Application of Python in Embedded MicroCM

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Abstract: This article mainly introduces the application of python language in embedded system chip, successfully through STM32F411 embedded chip python programming development, and finally realizes the measurement of temperature and humidity and display in digital tube. And based on MicroPython and TPYBoardV101 development board, DHT11 temperature and humidity sensor, MAX7219 developed a set of real-time temperature and humidity display device.
Key words: write embedded system; STM32; Python

INTRODUCTION

Due to the simplicity, readability and scalability of Python language, the research and application of scientific computing are increasing, and it has become one of the most widely used programming languages in the world. The Damien George is a bit of a great computer

The engineer, Damien George, who uses Python to work every day, one day came up with a bold idea: Can he use Python to control the SCM to operate the robot? Python language itself is a simple scripting language, some non-computer professional enthusiasts choose Python language as the entry language, but the ointment, it can not achieve some underlying operation, in the hardware field is not remarkable. The traditional embedded SPC development field is still mainly in C language, MicroPython is based on ANSIC, the syntax is basically the same as Python3, with an independent parser, compiler, virtual machine and class library. Currently, he supports the 32-bit-based ARM processors, such as STM32F411, STM32F405, STM32F407, ESP8266, and ESP32.

1. STM32F411 INTRODUCTION

Here's how to use the DHT11 temperature sensor to measure temperature and humidity in the STM32F411. And perform the temperature and humidity display through the MAX7219 digital tube. The batch data acquisition mode (BAM, Batch Acquisition Mode) of ST STM32F411 saves up to 50% of the power consumption. When the CPU kernel of the microcontroller IC chip is in a sleep state, this mode saves the sensor data directly to the SRAM. The processor kernel briefly wakes up to process the stored sensor data, and then returns to the power-saving mode [1-3].

The STM32F411 offers a wide temperature range selection of-40℃ to 105℃, with a minimum supply voltage reduced to 1.7V and rich integrated peripheral interfaces for harsh environmental applications. The on-chip peripheral interface includes a 12-bit 16-channel analog-to-digital converter IC chip (up to 2.4Msample / s), 11 timers (including a motor control timer and a 16-bit and 32-bit universal timer), and a multi-function communication interface. The communication interface includes three I2C ports (up to 1 Mbit/s), three USART (up to 12.5Mbit/s), one USB 2.0 OTG full-speed interface with an integrated physical layer, five SPI ports (up to 50 Mbit/s, including 5 I2S audio interfaces), and one SD / MMC interface.

The STM32F411 microcontrollers belong to the STM32 Dynamic Efficiency™ series. These MCU's provide dynamic power consumption for the high-performance F4 series, providing the best balance between dynamic power consumption (running mode) and processing performance, while integrating a lot of value-added features into a small 3 x 3 mm package.

2. DHT11 INTRODUCTION

The DHT11 is a temperature and humidity sensor with a calibrated digital signal output. Its precision humidity is ± 5%RH, its temperature is ± 2℃, its range humidity is 5~95%RH, and its temperature is-20~ + 60℃. DHT11 Digital Temperature and humidity Sensor is a temperature and humidity composite sensor with calibrated digital signal output. It uses special digital module acquisition technology and temperature and humidity sensing technology to ensure that the product has extremely high reliability and excellent long-term stability [4]. The sensor includes a resistive wet element and an NTC temperature measuring element and is connected to a high-performance 8-bit microU. Therefore, the product has the advantages of excellent quality, super fast response, strong anti-interference ability and high cost performance. Each DHT11 sensor is calibrated in an extremely accurate humidity check room. The calibration coefficients are present in the OTP memory in the form of a program, and these are invoked within the sensor during the processing of the detection signal. Single-line serial interface makes the system integration simple and fast. Very small volume and very low power consumption make it the best choice in harsh applications in this category. The product is a 4-pin single-row pin packaging, convenient connection. The wiring diagram of DHT11 and MCU as shown in FIG. 1.

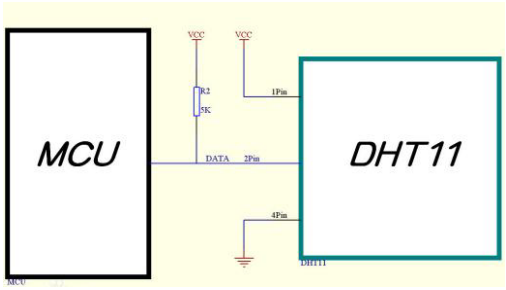

Figure 1 Schematic connection diagram of the embedded SCM and DHT11

3.MAX7219 INTRODUCTION

MAX7219 is a multi-bit LED display drive launched by MAXIM. It uses a 3-line serial interface to transmit data and can be directly connected to the microcontroller interface. Users can easily modify its internal parameters to achieve multi-bit LED display. It contains a hardware dynamic scanning circuit, a BCD decoder, a segment drive, and a bit drive [] 5-7]. In addition, it also contains 8X8-bit static RAM to store 8-digital display data. Obviously, it directly drives a 64-segment LED lattice display. When multiple MAX7219s cascade, more LED lattice displays can be controlled.Figure 2 below is a schematic diagram of MAX7219 control chip.

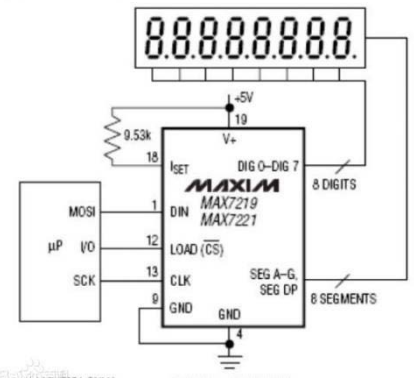

Figure 2 is a schematic diagram of the MAX7219 connecting the 8-bit digital tubes

Fig. 3 below shows the shutdown control mode, the true value table of FIG. 4 and FIG. 5, and the digital tube boundary control of FIG. 6.

Figure 3. MAX7219 shows the control mode word

MODE	ADDRESS CODE (HEX)	REGISTER DATA							
		D7	D6	D5	D4	D3	D2	D1	D0
Shutdown Mode	XC	X	X	X	X	X	X	X	0
Normal Operation	XC	X	X	X	X	X	X	X	1

Figure 4 Decode control mode word

DECODE MODE	REGISTER DATA								HEX CODE
	D7	D6	D5	D4	D3	D2	D1	D0	
No decode for digits 7–0	0	0	0	0	0	0	0	0	00
Code B decode for digit 0 No decode for digits 7–1	0	0	0	0	0	0	0	1	01
Code B decode for digits 3–0 No decode for digits 7–4	0	0	0	0	1	1	1	1	0F
Code B decode for digits 7–0	1	1	1	1	1	1	1	1	FF

Figure 5 The truth table of the decoding mode

7-SEGMENT CHARACTER	REGISTER DATA						ON SEGMENTS = 1							
	D7*	D6–D4	D3	D2	D1	D0	DP*	A	B	C	D	E	F	G
0		X	0	0	0	0		1	1	1	1	1	1	0
1		X	0	0	0	1		0	1	1	0	0	0	0
2		X	0	0	1	0		1	1	0	1	1	0	1
3		X	0	0	1	1		1	1	1	1	0	0	1
4		X	0	1	0	0		0	1	1	0	0	1	1
5		X	0	1	0	1		1	0	1	1	0	1	1
6		X	0	1	1	0		1	0	1	1	1	1	1
7		X	0	1	1	1		1	1	1	0	0	0	0
8		X	1	0	0	0		1	1	1	1	1	1	1
9		X	1	0	0	1		1	1	1	1	0	1	1
–		X	1	0	1	0		0	0	0	0	0	0	1
E		X	1	0	1	1		1	0	0	1	1	1	1
H		X	1	1	0	0		0	1	1	0	1	1	1
L		X	1	1	0	1		0	0	0	1	1	1	0
P		X	1	1	1	0		1	1	0	0	1	1	1
blank		X	1	1	1	1		0	0	0	0	0	0	0

Figure 6 Digital tube boundary control

SCAN LIMIT	REGISTER DATA								HEX CODE
	D7	D6	D5	D4	D3	D2	D1	D0	
Display digit 0 only*	X	X	X	X	X	0	0	0	X0
Display digits 0 & 1*	X	X	X	X	X	0	0	1	X1
Display digits 0 1 2*	X	X	X	X	X	0	1	0	X2
Display digits 0 1 2 3	X	X	X	X	X	0	1	1	X3
Display digits 0 1 2 3 4	X	X	X	X	X	1	0	0	X4
Display digits 0 1 2 3 4 5	X	X	X	X	X	1	0	1	X5
Display digits 0 1 2 3 4 5 6	X	X	X	X	X	1	1	0	X6
Display digits 0 1 2 3 4 5 6 7	X	X	X	X	X	1	1	1	X7

4. CODE IMPLEMENTATION

Through the above introduction, we have a general understanding of how DHT11 and MAX7219 work, and then this is how to control the development board, temperature and humidity sensors, and achieve digital tube display through python code.

```
from pyb import Pin, SPI
from max7219s import MAX7219
from dht import DHT11
import time
The Pin for the dht = DHT11 (Pin ("A2")) # data connection
cs = Pin("B11", Pin. OUT) # B11 connection output display
spi = SPI(1, SPI.MASTER, baudrate=1000000, polarity=0, phase=0, bits=8, firstbit=SPI.MSB)
dis = MAX7219(spi, cs)
dis.clear()
dis.brightness(3)
while True:
dht.measure() # starts the measurement
wendu = int(dht.temperature())
shidu = int(dht.humidity())
dis.temperature(wendu)
dis.humidity(shidu)
time.sleep(5)
```

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Development Technology of Honeysuckle Wolfberry and Chrysanthemum Tea

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Abstract: This study mainly takes honeysuckle, chrysanthemum, wolfberry as the main raw materials, supplemented by cassia, jujube and rock sugar for bagging, develop honeysuckle wolfberry chrysanthemum tea, combined with the sensory evaluation standards, according to the optimal range of one-factor experiment, combined with the response surface software analysis of the best formula. Develop a honeysuckle with heat protection and sweet taste wolfberry chrysanthemum tea. The best formula obtained according to the response surface method software is honeysuckle 1.049 g, chrysanthemum 0.405g, wolfberry 0.578g, cassia seed 0.447g, jujube 0.710g, rock sugar 0.978g. At this time, the honeysuckle wolfberry chrysanthemum tea developed bright and transparent color, tea mellow fragrance, is a kind of flower tea drink with heat and detoxification and liver protection.

Keywords: honeysuckle; Chrysanthemum; Chinese wolfberry; single factor experiment;response surface method

INTRODUCTION

Flower tea, also known as incense tea and incense burner, is a unique tea category in China. Flower tea is the main tea consumer product in northern China, and occupies a large market in Yunnan, Guizhou and Sichuan. Different scented teas have their unique effects and effects.

1. RESEARCH BACKGROUND AND SIGNIFICANCE

1.1 RESEARCH BACKGROUND OF HONEYSUCKLE

Honeysuckle is a traditional and pure medicinal materials, and at the same time, honeysuckle medicinal history is very long, often as one of the medicinal materials of clearing away heat and detoxification and clearing the fire and moistening the throat. According to statistics in China has about a third of the Chinese medicine prescriptions in honeysuckle and mountain honeysuckle, " the 1963 edition of the Chinese Pharmacopoeia first loaded honeysuckle for honeysuckle honeysuckle dry buds or with flowers, 2005 edition of the Chinese Pharmacopoeia increased the mountain silver flower, clear the mountain honeysuckle for honeysuckle plants, gray felt honeysuckle, red gland honeysuckle, south China honeysuckle or yellow brown honeysuckle dry bud or with early flowers[1]." Honeysuckle is also one of the precious Chinese medicinal materials in China. The word "honeysuckle" comes from the Compendium of Materia Medica, the reason is because the first flowering is white, and then yellow, hence the name. Honeysuckle variety resources are rich, grow in all parts of our country, and honeysuckle to the environment requirement is not too high, the root power is strong, so the planting scope is very broad. At the same time, the ornamental and economic value of honeysuckle are very high, so the development prospect of honeysuckle is also very broad. Honeysuckle combination flower tea can maintain health and increase resistance, which is the perfect choice for modern people. Honeysuckle as a flower tea product color is gray and green, the aroma is more pure and meaningful, the soup color is yellow and green and bright, the taste is very delicious, tender and soft leaf bottom. Honeysuckle is an excellent source of anthocyanins with a variety of health functions, mainly associated with antioxidant and anti-inflammatory activities[2].

1.2 RESEARCH BACKGROUND OF CHRYSANTHEMUM

Chrysanthemum is also one of the common Chinese medicinal materials, is a perennial herb in the family Asteraceae. The main thing used to make tea is the head inflorescencence, which has a little bitter taste. Chrysanthemum can not only be used as an ornamental plant, but also has a high medicinal value. Drinking chrysanthemum tea in summer has the effect of preventing heat, lowering blood lipid, blood pressure, beauty and skin. And chrysanthemum itself is a kind of fire medicine, and honeysuckle tea together can enhance the effect of honeysuckle heat and fire. Chrysanthemum tea contains flavonoids, a variety of vitamins and trace elements and other substances, which contains flavonoids substances have been proven through research, has a very high scavenging effect in free radicals. The amino acids contained in chrysanthemum can not only enhance the resistance of capillaries, but also resist pathogens. Extract from chrysanthemum can remove reactive oxygen species free radicals, reduce blood pressure and blood sugar in the blood, anti-aging, and enhance

the resistance of capillaries. Echinacea is rich in chemical composition, has a variety of pharmacological activities, and is a highly concerned immunomodulator[3]. From the nutritional point of view, chrysanthemum petals also have a high utilization value, which is rich in vitamins and high content of glutamate and other components, can be used to make tea, and has an incomparable utility to vegetables and fruits.

1.3 RESEARCH BACKGROUND OF CHINESE WOLFBERRY

Goji berry serves as a ripe fruit of small shrubs in the Solanaceae. Not only one of the Chinese medicinal materials, Chinese wolfberry has a long history in the same origin of medicine and food. At the same time, berry berries, betaine and other unique nutrients, have the effect of regulating blood lipid and immunity. Chinese wolfberry bubble water has improved eye fatigue, beauty and other effects. At the same time, Chinese wolfberry contains trace elements that can resist the oxidation of free radicals in the human body. Chinese wolfberry can also be used as a nutrient supplement (functional food) food important raw material, an important health food for both medicine and food."Modern medical research has proved that Chinese wolfberry, its taste is sweet, flat, return to the liver, kidney meridian, has the function of tonifying the liver, beneficial kidney, Ming purpose.Chinese wolfberry has the pharmacological effects of tonifying the kidney and nourishing the liver, enhancing immunity, anti-aging, anti-tumor, anti-oxidation, anti-fatigue and synergistic cancer prevention[4]".

1.4 RESEARCH BACKGROUND OF CASSIA SEED

Cassia is made of dry and mature seeds from legume cassia and small cassia. Because cassia seed is listed as one of the 109 kinds of identical Chinese medicinal materials and is used as a raw material for a long time, then the reports on the negative impact of cassia seed health care products are also increasing[5]. Cassia is also a kind of substance homologous to medicine and food in the food industry, which has a representative role in the treatment of vascular diseases. Cassia will also have a very broad prospect in the development of flower tea."The medicinal value of cassia seed has always been the attention of scientists from all walks of life; cassia seed contains a large number of bioactive chemical components to give cassia seed a variety of health benefits[6]". At the same time, the cassia seed in the excipients can not only improve insomnia and many dreams, but also can relieve liver fever. Because the liver plays an important role for the eyes, so cassia seed has the main effect for the people who often use their eyes. Reiko can relieve eye fatigue and effectively protect the eyes. When cassia and honeysuckle water together, can relieve internal heat, protect the purpose.

1.5 RESEARCH BACKGROUND OF RED DATES

Red date is a mild plant, its planting range is wide and good adaptability, has the utility of nourishing blood and calming god. Jujube soaked in water tastes slightly sweet, which can not only improve the taste of the combination of scented tea, but also promote serum protein and protect the liver, and a large number of sugars contained in red dates can also play a protective role in protecting the liver, but also can enhance the constitution and supplement its nutrition. Fresh red dates are rich in vitamin C, flavonoids, and cyclic adenosine phosphate (cAMP)[7]. Red dates can not only be eaten in daily life, but also soaked together with honeysuckle and cassia seeds, which can not only increase the unique aroma of red dates, but also improve the taste of combined scented tea. Red dates also have the effect of nourishing blood and tonifying qi, often soak in water to drink, can have the effect of nourishing the appearance, in yan freckle.

1.6 RESEARCH BACKGROUND OF ROCK SUGAR

Rock sugar is a crystalline heavy product of granulated sugar. Rock sugar can be used as candy in daily consumption, or as a medicinal combination of flower tea to adjust the taste. Rock sugar also protects the respiratory tract and moistens the throat. Rock sugar can not only improve the bitterness of combination tea itself, moisten lung cough. At the same time, because the rock sugar bubble water is rich in rich vitamins, it has a good protective effect for the respiratory tract cells. It can also be used in combination with different Chinese medicinal materials, not only can improve its taste, but also has the effect of nourishing the lungs. Because rock sugar is rich in glucose and it itself is too much sweet, so it has defects for patients with sugar medicine disease.

1.7 STUDY SIGNIFICANCE

Through the development process of honeysuckle wolfberry chrysanthemum tea, make a combination of scented tea with the effect of clearing heat and detoxification and clearing liver. In people's growing life, most people like to choose separate scented tea for brewing, but the effect and effect will be relatively single, and the taste and taste will also be relatively lacking. However, the developed combination flower tea not only solves the choice of the people, but also greatly improves its function and efficacy. At the same time, they can choose the suitable combination flower tea through their own needs. Combined with modern pharmacology, the influence of accessories in single factor experiment, the effect of the components of the combined flower tea was optimized, predicting the proportion of the combined flower tea and improving its taste and taste. For the further development and utilization of honeysuckle and a new combination of flower tea.

2. MATERIALS AND METHODS

2.1 TEST MATERIALS AND INSTRUMENTS

Test materials: Honeysuckle (from Henan); chrysanthemum (from Huangshan); Chinese wolfberry (from Ningxia); cassia seed (from Ningxia); red jujube (from Xinjiang); rock sugar (supermarket).
Test instrument: ME204 one in ten thousand analysis balance(Mettler-Toledo International Trade Co., Ltd.); Tea Set (Chinese ceramics)

2.2 TEST METHOD

2.2.1 Preparation of combined scented tea

Honeysuckle, chrysanthemum, Chinese wolfberry, cassia seed (cooked), red dates and rock sugar are called with the bag finished product, using a constant temperature cooking and cooling and leaving fragrance process.

2.2.2 Determination of sensory quality evaluation

The experiment was conducted through sensory evaluation of color, tissue form, flavor and fragrance, and the six factors of honeysuckle, chrysanthemum, wolfberry, cassia, jujube and rock sugar to determine the optimal range, and then the optimal formula of combined flower tea was obtained through the response surface method. Sensory evaluation was performed using the "100 points scale" scoring method[8][9]As shown in Table 2.1 below, a group of ten people is evaluated.

Table 2.1 Sensory evaluation criteria of Honeysuckle wolfberry and chrysanthemum tea

organoleptic indicator	code of points	Score / score
colour and lustre (30 Points)	Brown and yellow, clear and bright	21~30
	Darmer or light	11~20
	The color is dark and opaque	1~10
Organization form	Clarification, no obvious precipitation	21~30
	Have a little precipitation, more bright	11~20
(30 Points)	The precipitation is obvious	1~10
Taste and fragrance (40 Points)	Sweet and delicious, taste harmonious, slightly bitter honeysuckle, chrysanthemum fragrance and wolfberry sweet	31~40
	The taste is light and bitter	21~30
	Bitter obvious	11~20

2.3 ONE-FACTOR EXPERIMENTAL DESIGN

2.3.1 Influence of honeysuckle addition on the sensory evaluation of combined scented tea

Univariate experiments were designed with 0.2g,0.6g,1.0g,1.4g,1.8g,2.2g,2.6g for added amounts of honeysuckle in chrysanthemum 0.5g, content of wolfberry 0.6g, 0.6g, 0.7g of jujube and 0.8g of rock sugar.

As can be seen from Figure 2.1, with the addition of chrysanthemum, wolfberry, cassia, jujube and rock sugar, the amount of the added amount of 1.4g, the combined flower tea is rich and the color is bright, the color will be too rich, and the taste will become bitter and unacceptable, and the sensory score will decrease.

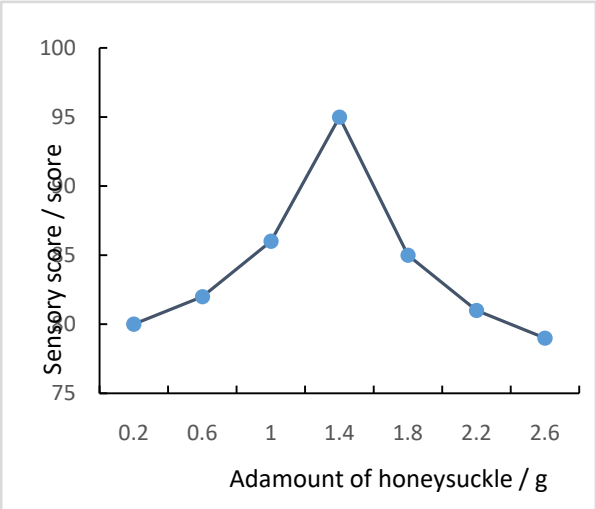

Figure 2.1 Effect of the addition amount of honeysuckle on the sensory scores

2.3.2 Influence of chrysanthemum addition on the sensory evaluation of combined flower tea

Univariate experiments were designed as 0.1g,0.2g,0.3g,0.4g,0.5g,0.6g,0.7g for honeysuckle at 1.4g, wolfberry at 0.6g, 0.6g cassia at 0.6g, jujube at 0.7g and 0.8g rock sugar.

As can be seen from Figure 2.2, with a certain amount of honeysuckle, wolfberry, cassia seed, jujube and rock sugar added, with the increase of chrysanthemum addition, the aroma of chrysanthemum in the combined flower tea will be too strong, the color will also deepen, and the score of sensory evaluation will also increase. But when the chrysanthemum is 0.5g, the combined flower tea will taste best. If the increase of chrysanthemum added continues, the chrysanthemum fragrance of the combined flower tea will be too heavy, the taste is slightly bitter, difficult to enter, and the sensory score

will also be reduced.

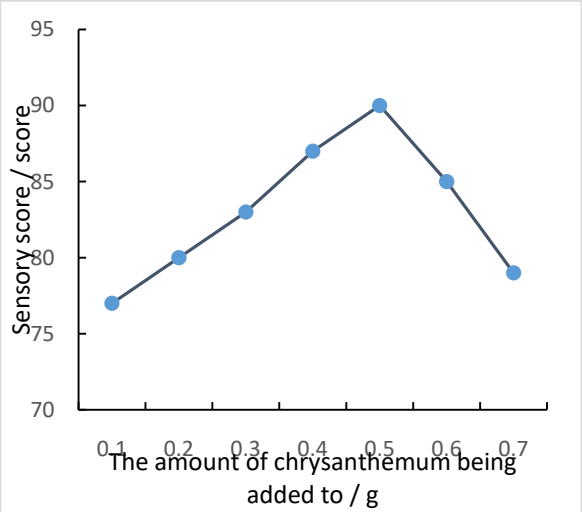

Figure 2.2 Effect of the addition amount of chrysanthemum on the sensory scores

2.3.3 Influence of Chinese wolfberry addition on the sensory evaluation of combined scented tea

Univariate experiments were designed with 0.2g,0.4g,0.6g,0.8g,1.0g,1.2g,1.4g at the levels of 1.4g of honeysuckle, chrysanthemum content of 0.5g, cassia seed content of 0.6g, red dates content of 0.7g, and rock sugar content of 0.8g.

As can be seen from Figure 2.3, with a certain amount of honeysuckle, chrysanthemum, cassia seed, jujube and wolfberry added, with the increase of wolfberry added, the fragrance of wolfberry in the combined flower tea will gradually increase, the color will gradually become light red, and the score of sensory evaluation will also increase. But when the amount of wolfberry is 0.6g, the taste of combination tea will be better. If we continue to increase the amount of Chinese wolfberry, the wolfberry fragrance of the combination of flower tea will be too heavy, and the taste will lose the unique aroma of honeysuckle tea, so that the sensory score will also be reduced.

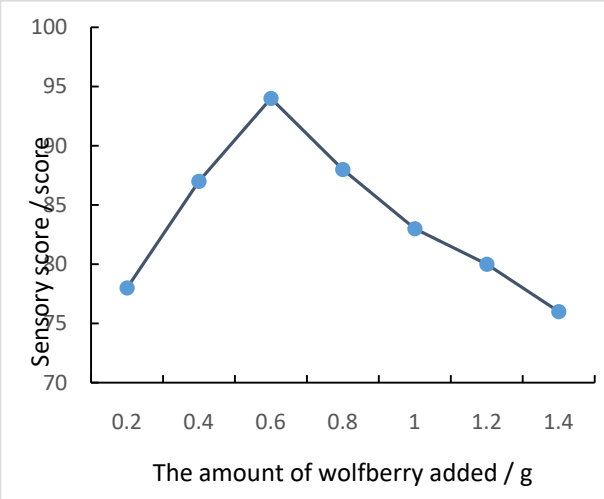

Figure 2.3 Effect of the amount of wolfberry on sensory scores

2.3.4 Effect of cassia seed addition on the sensory evaluation of combined scented tea

Univariate experiments were designed as 0.4g,0.5g,0.6g,0.7g,0.8g,0.9g,1.0g under the conditions of 1.4g honeysuckle, 0.5g chrysanthemum, 0.6g wolfberry, jujube 0.7g and 0.8g rock sugar.

It can be concluded from Figure 2.4 that in the certain amount of honeysuckle, chrysanthemum, wolfberry, jujube and rock sugar, the amount of cassia seed addition increases, the color of combined flower tea is yellow and the fragrance of tea flavor, and the score of sensory evaluation will also increase. However, when the amount of cassia seed added is 0.8g, the combination of scented tea will taste the best. If the added amount of cassia seed is further increased, the cassia seed fragrance of the combined scented tea will be too strong, the taste will be sweet and bitter, the color will be dark, and the sensory score will also be reduced.

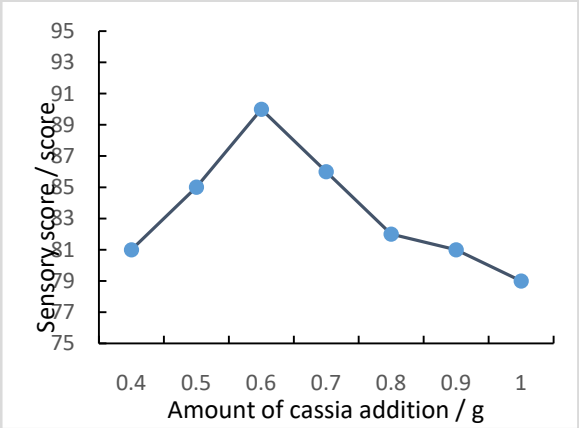

Figure 2.4 Effect of the addition amount of determinants on sensory scores

2.3.5 Influence of the addition amount of red dates on the sensory evaluation of combined scented tea

Univariate experiments were designed with 1.4g honeysuckle, 0.5g chrysanthemum, 0.6g wolfberry, 0.6g cassia seed and 0.8g rock sugar with 0.2g jujube addition and 0.4g,0.6g,0.8g,1.0g,1.2g,1.4g.

As can be seen from Figure 2.5, with a certain amount of honeysuckle, chrysanthemum, wolfberry, cassia seed and rock sugar added, with the increase of dates added, the aroma of dates in the combined flower tea will be too strong, the color will gradually become light red, the taste is slightly sweet, and the score of sensory evaluation will also increase. But when the amount of jujube added is 0.8g, the combination of flower tea tastes the best. If the added amount of red jujube continues to be increased, the red date flavor of combined flower tea will be too strong, and the taste is relatively sweet, which covers up the unique fragrance of combined flower tea itself, and the sensory score will also decline accordingly.

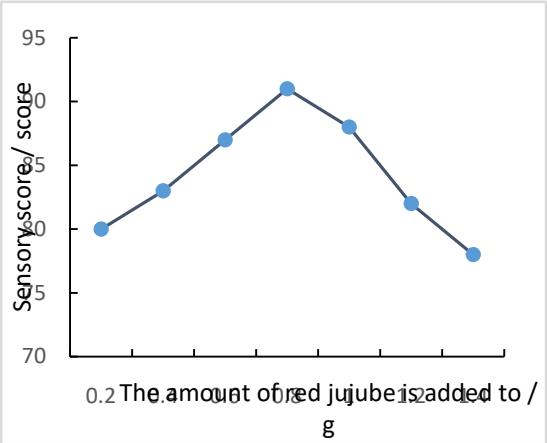

Figure 2.5 Effect of the addition amount of red dates on the sensory scores

2.3.6 Influence of rock sugar added amount on the sensory evaluation of combined flower tea

Univariate experiments were designed as 0.2g,0.4g,0.6g,0.8g,1.0g,1.2g,1.4g with 1.4g honeysuckle, 0.5g chrysanthemum, 0.6g wolfberry rock sugar, 0.6g cassia seed, and 0.7g red dates.

As can be seen from Figure 2.6, under the premise of a certain amount of honeysuckle, chrysanthemum, wolfberry, cassia and jujube, with the increase of rock sugar addition, the taste of the combined flower tea will be too sweet. But when the rock sugar is added to 0.8g, the combination tastes best. If the amount of rock sugar is further increased, the sweetness of combined flower tea will gradually increase, and the taste is too sweet and greasy, covering the unique taste of combined flower tea itself, so that the sensory score will also be reduced.

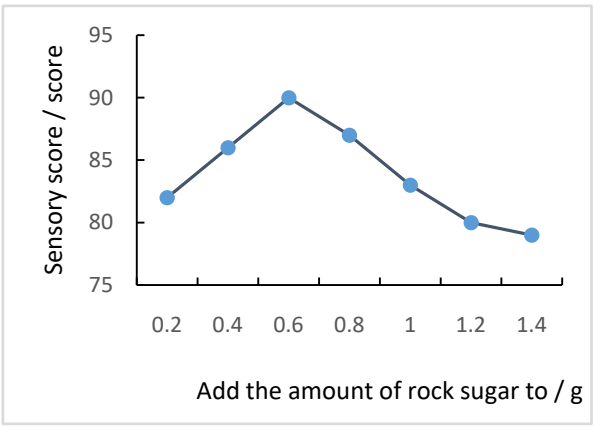

Figure 2.6 Effect of the added amount of rock sugar added on the sensory score

2.4 RESPONSE SURFACE METHOD DESIGN

2.4.1 Test factor level of the response surface

Effect of the amount of material added in the univariate experiment above[10],Select honeysuckle content is (A), chrysanthemum content is (B), Chinese wolfberry content is (C), cassia seed content is (D), red jujube content is (E) and rock sugar content is (F) the six affect the combination of flower tea larger interval, according to the Box-Behnken response surface optimization experiment design of the data results, get the following response surface test factor level coding table[11]. As shown in Table 2.2 below, select the level segment with great influence of addition amount on sensory evaluation.

Table 2.2 Colevel of response surface

horizontal	Honeysuckle content of A / g	Chrysanthemum content was B / g	The Chinese wolfberry content was C / g	Determinant content of D / g	Red date content of E / g	Rock sugar content is F / g
-1	1.0	0.4	0.4	0.4	0.6	0.6
0	1.4	0.5	0.6	0.6	0.7	0.8
1	1.8	0.6	0.8	0.8	0.8	1.0

2.4.2 Response surface optimization experiment

According to the response surface test factor level coding table above, the response surface principle experimental data was analyzed[12]. The experimental design results are shown in Table 2.3 below.

Table 2.3. Design of the B o x-Behnken test

test number	A	B	C	D	E	F	Sensory score / score
1	1	-1	0	-1	0	0	80
2	-1	0	-1	0	0	1	80
3	0	-1	0	0	1	-1	79
4	1	0	0	-1	1	0	81
5	1	0	0	-1	-1	0	80
6	-1	0	1	0	0	1	82
7	0	1	0	0	1	-1	83
8	1	0	-1	0	0	1	82
9	-1	0	-1	0	0	-1	78
10	-1	0	0	-1	-1	0	76
11	1	0	0	1	1	0	85
12	0	-1	0	0	1	1	81
13	0	0	1	-1	0	1	82
14	1	0	0	1	-1	0	81
15	-1	1	0	-1	0	0	79
16	1	0	1	0	0	1	86
17	0	0	0	0	0	0	97
18	0	1	0	0	-1	1	80

Table 2.3 (continued)

test number	A	B	C	D	E	F	Sensory score / score
19	0	0	0	0	0	0	95
20	0	1	0	0	1	1	85
21	0	-1	1	0	-1	0	80
22	0	-1	1	0	1	0	81
23	0	1	-1	0	-1	0	80
24	-1	0	1	0	0	-1	79
25	1	1	0	1	0	0	86
26	1	1	0	-1	0	0	81
27	0	0	-1	-1	0	1	79
28	0	0	-1	1	0	1	82
29	0	1	1	0	-1	0	82
30	1	0	-1	0	0	-1	80
31	0	1	0	0	-1	-1	81
32	0	0	0	0	0	0	95
33	1	-1	0	1	0	0	82
34	0	0	0	0	0	0	96
35	0	-1	0	0	-1	1	79
36	-1	1	0	1	0	0	81
37	-1	0	0	1	-1	0	80
38	0	0	1	1	0	1	84
39	0	0	-1	1	0	-1	81
40	0	-1	-1	0	-1	0	77
41	-1	0	0	-1	1	0	76
42	0	0	0	0	0	0	96
43	0	1	1	0	1	0	85
44	0	-1	0	0	-1	-1	78
45	-1	0	0	1	1	0	84
46	-1	-1	0	1	0	0	82
47	1	0	1	0	0	-1	82
48	0	0	1	1	0	-1	80
49	0	0	1	-1	0	-1	83
50	0	-1	-1	0	1	0	81
51	0	0	-1	-1	0	-1	78
52	0	1	-1	0	1	0	83
53	-1	-1	0	-1	0	0	76

Table 2.3 (continued)

test number	A	B	C	D	E	F	Sensory score / score
54	0	0	0	0	0	0	95

3. RESULTS AND ANALYSIS

3.1 MODEL BUILDING AND ANOVA

From the experimental data above, the experimental data results were analyzed using Design-Expert software. As shown in Table 3.1 below.

As shown by the experimental results in Table 3.1 below, the model is highly significant (p 0.01). Factors CD and DE had significant effects on the sensory scores (p 0.05), and factors A, B, C, D, E, F, and A^2, B^2, C^2, D^2, E^2And F^2The effect on the sensory scores was extremely significant (p 0.01). As can be seen from the F value in Table 3.1 below, the effect of the addition of the six materials on the score results of the sensory score is from large to small in order: cassia seed> honeysuckle> chrysanthemum> jujube> wolfberry> rock sugar. After analyzing the regression fitting of the data, the quadratic polynomial regression fitting equation prediction model with sensory score (Y), honeysuckle (A), chrysanthemum (B), wolfberry (C), cassia seed (D), jujube (E) and rock sugar (F) as the independent variables is:

$Y=95.67+1.37A+1.25B+1.04C+1.54D+1.25E+0.8333F+0.3750AB+0.3750AC-0.5000AD+0.1250AE+0.1250AF++0.1250BC-0.1250BD+0.3125BE-0.2500BF-0.8750CD-0.3750CE+0.2500CF+0.8750DE+0.6250DF+0.5000EF-5.03A^2-4.74B^2-4.57C^2-5.03D^2-5.24E^2-4.94F^2$

The coefficient of variation was 1.38% and the correlation coefficient was $R^2=0.9767$, $R^2_{Adj}=0.9525$. It indicates that the model is well fit.

Table 3.1 Analysis of ANOVA

source of variation	quadratic sum	free degree	mean square	*F price*	*p price*	conspicuousness
regression model	1415.66	27	52.43	40.37	<0.0001	**
A	45.37	1	45.37	34.93	<0.0001	**

Table 3.1 (continued)

source of variation	quadratic sum	free degree	mean square	*F price*	*p price*	conspicuous ness
B	37.50	1	37.50	28.87	<0.0001	**
C	26.04	1	26.04	20.05	0.0001	**
D	57.04	1	57.04	43.92	<0.0001	**
E	37.50	1	37.50	28.87	<0.0001	**
F	16.67	1	16.67	12.83	0.0014	**
AB	1.13	1	1.13	0.8661	0.3606	
AC	1.13	1	1.13	0.8661	0.3606	
AD	4.00	1	4.00	3.08	0.0911	
AE	0.1250	1	0.1250	0.0962	0.7589	
AF	0.1250	1	0.1250	0.0962	0.7589	
BC	0.1250	1	0.1250	0.0962	0.7589	
BD	0.1250	1	0.1250	0.0962	0.7589	
BE	1.56	1	1.56	1.20	0.2828	
BF	0.5000	1	0.5000	0.3849	0.5404	
CD	6.13	1	6.13	4.72	0.0392	*
CE	1.000	1	1.000	0.8661	03606	
CF	6.13	1	6.13	4.72	0.3883	
DE	3.13	1	3.13	2.41	0.0392	*
DF	2.00	1	2.00	1.54	0.1330	
EF	2.00	1	2.00	1.54	0.2257	
A^2	260.01	1	260.01	200.18	<0.0001	**
B^2	230.72	1	230.72	177.63	<0.0001	**
C^2	214.76	1	214.76	165.35	<0.0001	**
D^2	260.01	1	260.01	200.18	<0.0001	**
E^2	282.00	1	282.00	217.11	<0.0001	**
F^2	251.46	1	251.46	193.60	<0.0001	**

Table 3.1 (continued)

source of variation	quadratic sum	free degree	mean square	*F price*	*p price*	conspicuousness
residual	33.77	26	1.30			
Unplanned item	30.44	21	1.45	2.17	0.1986	
pure error	3.33	5	0.6667			
sum	1449.43	53				

pour:R^2=0.9767, R^2_{Adj}=0.9525; "*" indicates a significant difference (p <0.05), and "* *" indicates that the difference is extremely significant (p <0.01).

As can be seen from the ANOVA in Table 3.2 above, the model of F =40.37, p <0.0001, so p <0.01, shows that the quadratic model used in the experiment is extremely significant, and no misfitting factors exist, which is statistically significant. Therefore, the regression equation can be used instead of the experimental real point to analyze the experimental results.

3.2 RESPONSE SURFACE MAP INTERACTION INFLUENCE AND CONTOUR MAP ANALYSIS

Response surface curves and contour images were drawn according to the regression equation. According to the shape of the fitted response area, the proportion of individual factors was studied. The following figure shows the influence of the amount of honeysuckle (A), the amount of chrysanthemum (B), the amount of wolfberry (C), the amount of cassia (D), the amount of jujube (E) and the amount of rock sugar (F) on the sensory evaluation score. The interaction between the factors can be reflected by the response surface maps and contour maps below.

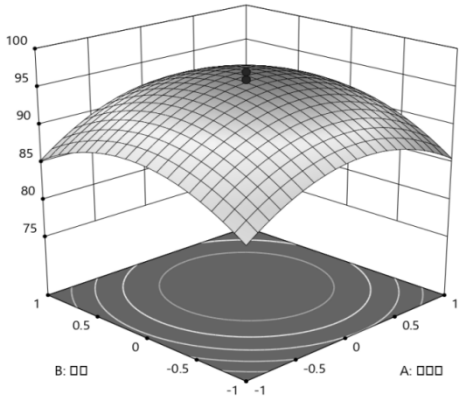

Figure 3.1 Response surface diagram of the interaction effect of Honeysuckle (A) and chrysanthemum (B) on sensory evaluation

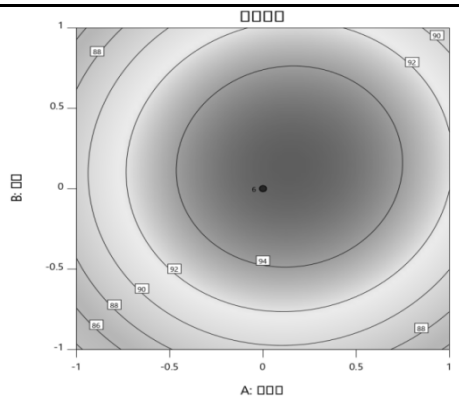

Figure 3.2 Contour plot of the interaction effect of Honeysuckle (A) and chrysanthemum (B) on sensory evaluation

It can be concluded from Figure 3.1 and Figure 3.2 above that the sensory score of combined flower tea gradually increases as the amount of honeysuckle added increases, and the maximum sensory score value in the amount of honeysuckle added is 1.0g~1.8g.It can be seen from the response surface that the amount of chrysanthemum added reached the best sensory score and the maximum sensory score at 0.4g~0.6g. From the contour map above, we can conclude that the interaction between honeysuckle (A) and chrysanthemum (B) is not significant.

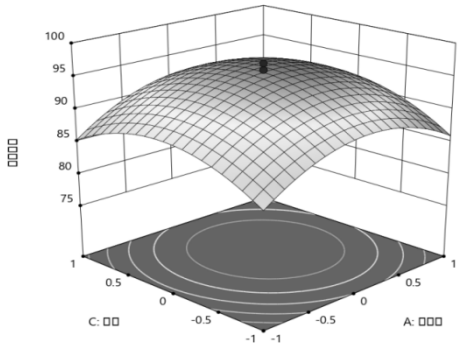

Figure 3.3 Response surface curve of the interaction of Honeysuckle (A) and Wolwolfberry (C) on sensory evaluation

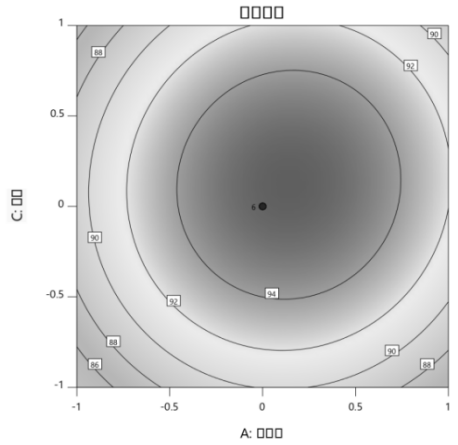

Figure 3.4 Contour plot of the interaction of Honeysuckle (A) and Wolwolfberry (C) on sensory evaluation

It can be concluded from Figure 3.3 and Figure 3.4 above that at the fixed level, the sensory score of the combination flower tea gradually increased, and the maximum sensory score appeared in the range of 0.4g~0.8g. The amount of honeysuckle added reached the best sensory score at 1.0g~1.8g, and the sensory score also reached the maximum. From the contour map above, we can conclude that the interaction between honeysuckle (A) and wolfberry (C) is not significant.

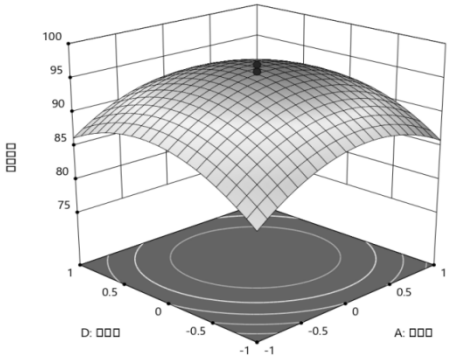

Figure 3.5 Response surface diagram of the sensory interaction of honeysuckle (A) and cassia (D)

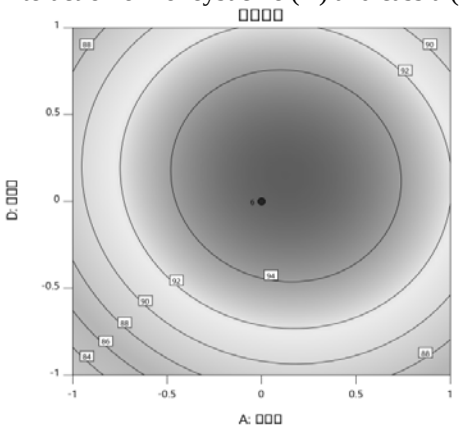

Figure 3.6 Contour plot of the interaction effect of the Honeysuckle (A) and the cassia seed (D) on the sensory assessment

It can be concluded from Figure 3.5 and Figure 3.6 above that the sensory score of the combined flower tea is gradually increased, and the maximum sensory score value in the amount of honeysuckle is 1.0g~1.8g. Moreover, the amount of cassia addition on 0.4g~0.8g reaches the best sensory score, and the sensory score also reaches the maximum. From the contour map above, the interaction between honeysuckle (A) and cassia (D) is not significant.

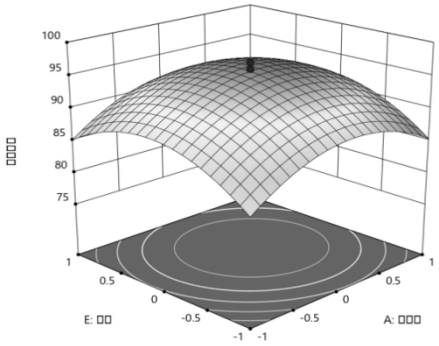

Figure 3.7 Response surface diagram of the interaction effect of Honeysuckle (A) and jujube (E) on sensory evaluation

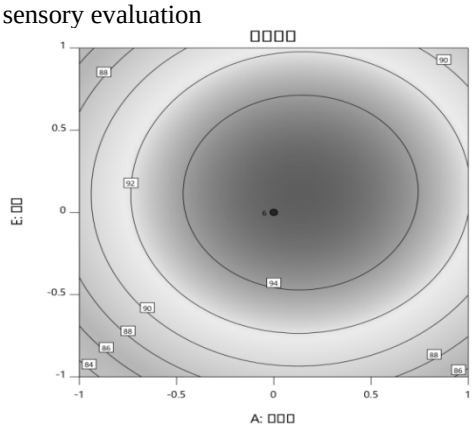

Figure 3.8 Response surface diagram of the interaction effect of Honeysuckle (A) and jujube (E) on sensory evaluation

It can be concluded from Figure 3.7 and Figure 3.8 above, it is a fixed level that the sensory score of the combination of scented tea gradually increases with the increase of jujube added, and the maximum value appears in the range of 0.6g~0.8g. And honeysuckle added amount in 1.0g~1.8g sensory evaluation reached the best, sensory score also reached the maximum. The interaction between honeysuckle (A) and jujube (E) was not significant.

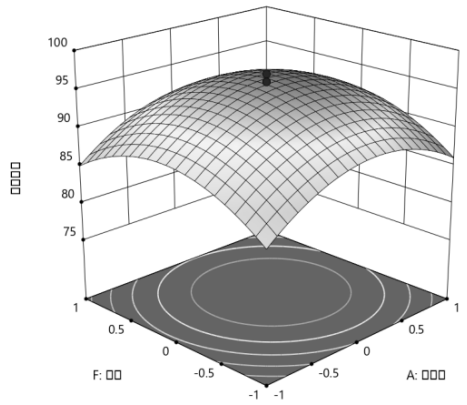

Figure 3.9 Response surface diagram of the interaction effect of Honeysuckle (A) and rock sugar (F) on sensory evaluation

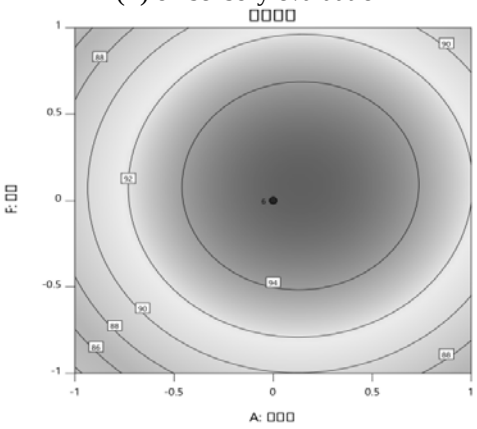

Figure 3.10 Contour plot of the interaction effect of Honeysuckle (A) and rock sugar (F) on sensory evaluation

It can be concluded from Figure 3.9 and Figure 3.10 that the sensory score of the combined flower tea gradually increased, and the maximum sensory score value in the amount of honeysuckle is 1.0g~1.8g. And the amount of rock sugar added in 0.6g~1.0g sensory evaluation reached the best, the sensory score also reached the maximum. From the contour map above, we can conclude that the interaction between honeysuckle (A) and rock sugar (F) is not significant.

4 RESULTS AND DISCUSSION

4.1 RESULTS

The final product of honeysuckle medlar chrysanthemum tea is yellow-green, clear and not bitter; with honeysuckle unique flower tea aroma; sweet and delicious, harmonious taste, no bad flavor. At this time, the optimal value of the sensory formula obtained by the analysis of the response surface software was 85.433 points, that is, the optimal formula was: 1.049g honeysuckle, chrysanthemum 0.405g chrysanthemum, wolfberry 0.578g, cassia 0.447g, jujube 0.710g and 0.978g rock sugar.

4.2 DISCUSSION

Combination flower tea is a tea made of making the flowers or leaves of different kinds of plants or their fruit combination. Its taste, effect and efficacy mostly come from the kind of flower tea added. Honeysuckle is an excellent source of anthocyanins, with a variety of nutritional and health care effects[12].

This study mainly takes honeysuckle, chrysanthemum and wolfberry as the main materials, cassia seed, jujube and rock sugar as the raw materials, to develop a clear heat protection and sweet taste of honeysuckle wolfberry chrysanthemum combination flower tea. This study adopts the process of constant temperature cooking and cooling, to ensure that the color and fragrance of combined flower tea are retained to the best, so that the color, aroma and taste of combined flower tea are retained to the best. At the same time, the combination of scented tea is made by tea bag packaging, which has the advantages of convenient carry and use, and can be loved by the masses. Combination of flower tea has a certain protective effect on the eyes of people who now like to play with mobile phones or computers, relieving eye fatigue, improving the body's immunity, antioxidant, and reducing anger[13]. Moreover, in this study, with sensory evaluation as the index, combined with univariate experiment and Design-Expert software optimization analysis, the material and the final formula of honeysuckle combined flower tea were reassembled to improve the color and taste of the combined flower tea.

Although this study obtained the optimal formulation of the materials in the combined flower tea, there are still some problems to be solved due to the insufficient time and research ability. At the same time, due to the different taste of the combined flower tea and the influence of its own physical factors, and the different choice and pursuit of the combined flower tea, the sensory evaluation of the experimental data has certain limitations.

ACKNOWLEDGEMENT

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Bioinformatics Study of Calcium Binding Protein

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Abstract: Calcium is one of the most critical basic elements in biological activities. Calmodulin is an important component of the cell second messenger system. It plays a key role in the transmission of calcium signaling system, regulating physiological metabolism, gene expression and controlling the normal growth and development of cells. Calcium ion regulates cell signal transduction and cell life cycle processes by binding to specific receptors or calcium binding proteins. In this study, 18 typical calcium binding proteins were selected, and their three-dimensional structures were measured by X-ray diffraction and other experimental means. In this paper, calcium binding proteins will be studied from the perspective of bioinformatics.

In order to systematically study these proteins, the three-dimensional spatial structures of these 18 calcium binding proteins were analyzed by bioinformatics using software such as discovery studio and mega, and their physical and chemical properties and structural reliability were obtained. At the same time, molecular docking method was used to find its natural small molecule ligands, so as to find natural inhibitors with growth inhibition. Using these research methods, we can determine whether the three-dimensional structure of calcium binding protein predicted by prediction algorithm and software has certain reliability and whether it can be used to find the ligand of calcium binding protein to search for new drug molecules.

The first step of this study is to understand how calcium ion regulates the structure and function of proteins in biological systems. All the 18 calcium binding proteins were hydrophilic. The three-dimensional models of the three calcium binding proteins were evaluated by Laplace conformation. It is easy to know that the three-dimensional models of the three proteins are reasonable and stable conformations. Using molecular docking to find natural small molecule ligands ibuprofen, transferase and hydrolase for three calcium binding proteins 1a2q, 1a4g and 3flr respectively, it is proved that the three-dimensional structure of protein predicted by algorithm and software is also feasible for practical bioinformatics research and drug search based on molecular docking.

Bioinformatics is the research in the field of protein in information science. Using bioinformatics methods to predict can effectively obtain the most real results and provide valuable reference information for experimental research. This research takes protein as the object and content. It mainly studies the general characteristics of protein by some methods commonly used in protein bioinformatics research. Using good bioinformatics can reduce the workload of experimenters, solve some difficult problems through simple experiments, and deepen our understanding of experiments and data phenomena.

Key Words: Calcium Ion;Calcium Binding Protein;Biological Information;Receptor

1. CHAPTER

1.1 CALCIUM-ION-BINDING PROTEIN

1.1.1 The importance of calcium ions in life

Calcium is one of the most prevalent and key essential substances in organism life. For example, the most common biomarker calcium ion-binding protein controls the entire cell life cycle from fertility to apoptosis (including cell division, cell proliferation and cell death).

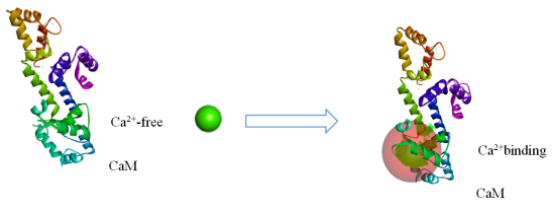
In the past few decades, as the function and role of calcium signaling have been deeply studied in academia, calcium ion-binding proteins have found important functions in more life processes. For example, it acts as relatively static and structural stability while participating in signaling as a second messenger of the cell with more dynamic functions that depend on certain specific properties of calcium ions.The most important function of the cell requires the involvement of calcium, with the calcium ion itself involved in regulating calcium movement and the processing of calcium signaling.

1.1.2 Calcium-ion-binding protein

Calcium ions alter the configuration of the protein through ion-binding proteins to constitute a calcium-ion-binding protein. Proteins are the material basis of life, and protein molecules are associated with amino acids in covalent polypeptide chains. Each protein has a specific spatial structure, called a protein three-dimensional structural conformation[2]. Calcium ion-binding proteins (C a BP) are proteins with high affinity for calcium and require calcium to participate in interactions with other components of the cell, with a molecular weight generally between 25,000 and 28,000.It contains large amounts of dicarboxylic acids (calcium molecules bound to proteins that connect four calcium ions)[1].

1.1.3 Extracellular calcium-ion-binding protein

Extracellular calcium-binding proteins are mainly divided into[1]:
(1) The EGF domain that binds to calcium ions;
(2) Extracellular calcium-ion receptors;
(3) Matrix-interacting molecules for inner lumen calcium ion receptors.
The important function of ECF is to regulate the interaction between cells or between cells and matrix and stabilize protein structure. Many extracellular biological activities require the participation of calcium ions, such as receptor activation, cell adhesion, etc. The important difference between intracellular calcium binding proteins is that the ratio of extracellular calcium binding proteins to calcium ions is lower than that of intracellular calcium binding proteins to calcium ions. Calcium concentration will increase when cells are stimulated[1].
1.1.4 Intracellular calcium-ion-binding protein
According to the C aB P structure characteristics, their species can be roughly divided into two categories:
(1) The amino acid composition, shape and physical properties of calcium binding proteins composed of EF are similar[3];
(2) EF chiral calcium ion binding proteins have different binding abilities to calcium ions, no combinatorial rules and no similar structure.
The EF chiral structure mainly acts as an adhesive between the protein structure and the calcium ions.Here's an example of calcin (C a M) to describe



its binding process (see Figure 1-1)[1].

Figure 1-1 Complex formation process of calcium ion and calcium binding protein

The PDB number of the proteins in Figure 1-1 is 4HEX.Usually, calcium-ion-bound calcium complexes can act on multiple target proteins, compared with some specific target proteins that can also affect calcium affinity for calcium-ion-binding proteins. The change in protein-related calcium configuration makes the transmission of calcium signals and the performance of calcium receptor function more effective[4].
1.2 STRUCTURE OF CALCIUM ION BINDING PROTEINS AND THEIR BIOINFORMATICS RESEARCH METHODS
1.2.1 The PDBsum database and the PDB database
In the field of bioinformatics, protein structural information at all levels is stored as computer documents, and can be found and downloaded in some databases, and obtaining this information is often the first step in related research using biometric means. These databases are also the source of data discussed in this study. Individuals and organizations will build and maintain databases according to their specific needs and goals, and different databases can also provide different tools to analyze the data they store. Brenda, for example, is a dedicated database to store various data related to enzymes. Some databases related to protein studies are listed in Table 1-1.

Table 1-1 Examples of some protein related databases

data base	brief introduction	URL
PDB	PDB (Protein Data Bank) is a database of experimental structures of proteins and provides raw data for other databases	http://www.rcsb.org
PDBsum	PDBsum is a comprehensive database based on PDB annotation information	http://www.ebi.ac.uk/pdbsum
SCOP	SCOP mainly relies on structural biology experts to classify structures in the PDB database. It is slower to update on a pace	http://scop.mrc-lmb.cam.ac.uk

This article mainly uses the PDB sum database (http: / / www.ebi.ac. The uk / pdbsum) is used to collect the 3 D structures of biological macromolecules (such as proteins, nucleic acids and sugars)[6]. This topic selects the most suitable biomolecules for study among the large amount of biomolecular information collected by the PDB database. The database provides the basic information of the protein structure and the detailed information of the three structural data.Until April of this year, the PDB database

collected more than 190,000 macromolecular structures.

The main structure of a protein is the amino acid sequence, commonly referred to as the sequence. In bioinformatics, the information sequences can be stored on a computer for use as FASTA files, and the sequences corresponding to the protein structure can be found in the PDB sum database. As shown in Figure 1-2, this is a typical FASTA file.

```
1 >4HEX_1|Chains A, B|Calmodulin|Mus musculus (10090)
2 MHHHHHHMADQLTEEQIAEFKEAFSLFDKDGDGTITTKELGTVMRSLGQNPTEAELQDMINEVDADGNGTIDFPEFLTMM
3 ARKMKDTDSEEEIREAFRVFDKDGNGYISAAELRHVMTNLGEKLTDEEVDEMIREADIDGDGQVNYEEFVQMMTAK
```

Figure 1-2 Contents of a typical FASTA file

1.3 BIOINFORMATIC ANALYSIS OF CALCIUM-ION-BINDING PROTEINS

To collect the data on this topic, we entered the keyword "Calcium binding protein" in the PubMed, in which 14,793 articles (as of 25 April 2022) related to the calcium ion position were collected. Some representative protein sequence data were collected by reading these papers. We then downloaded the sequence information of some protein with some calcium ions located at canonical points from the PubMed database. The 18 kinds of calcium-containing protein using Clustal multiple sequence comparison, also use BioEdit drew the Mega system tree, the results found that the same species of different species (animals, plants, bacteria) calcium ion sequence is more similar, with PyMOL examine the structure of all protein related calcium ions, know protein related calcium ion has a high conserved structure. Structural comparisons indicate that different calcium ionolayers produced by a single species (animals, plants, bacteria) have more similar spatial structures. Analysis of the secondary structure by the STRIDE method shows that the calcium-ion-exchange proteins have a certain number of other secondary structures, such as the rotation angle (T). Due to the complexity and irregularity of the calcium arrangement, it is currently becoming more and more urgent to develop a tool to quickly and accurately predict the contacts of calcium ions with proteins.

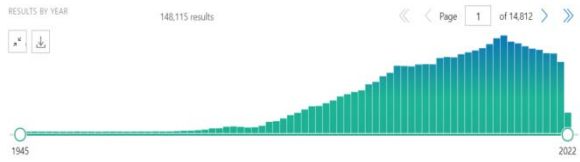


Figure 1-3 Changes in the number of publications on Calcium binding proteins on the PubMed website from 1945 to March 2022

1.4 THE BACKGROUND AND PRACTICAL SIGNIFICANCE OF THIS RESEARCH PROJECT

1.4.1 Research Background

Calcium acts as a second messenger in eukaryotic cells in an ionic state and is one of the most critical elements of life activity. The biological function of calcium ion is realized in combination with specific calcium receptors or calcium, which regulates cell signalling and regulates the cell life cycle (including cell division, differentiation and apoptosis) processes.To understand and predict how calcium ions affect protein structure and function in biological systems, the first step is to determine the binding sites of calcium ions and proteins in calproteins. To deeply investigate the complexity and irregularity of calcium ion-associated proteins, it is becoming increasingly urgent to develop software to quickly and accurately predict calcium binding points[22]. To date, all calcium binding proteins are based on protein structure levels rather than the protein matrix.

1.4.2 Practical Significance

Traditional protein research relies on experiments, but many jobs done by experiments alone are difficult. Bioinformatics is now mature at all levels of protein structure studies[24]To this end, I will choose the representative calcium structure and sequence from the PDB database, try to integrate a series of bioinformatics from different dimensions of protein structure, from the known structure of calcium sequence and calcium related proteins, try to draw a series of conclusions on the correctness of calcium related protein structure and function (including validation), confirm that bioinformatics means can help bioinformatics research other proteins, provide researchers with accurate data, reduce research costs. I believe that the combination of certification theory and experiments can bring the study of calcium ions into a new stage of development together with proteins.

2. MATERIALS AND METHODS

2.1 CONSTRUCTION OF THE CALCIUM-ION-BINDING PROTEIN DATASET

All of the calcium-ion-binding protein sequence and structure data used in this study were obtained from the PDB sum database (http://www.rcsb.org) is obtained. In the result page, you can see the number, the figure, the enzyme, the name, the biological source, the method of structure analysis, and the publication time. Click directly on the desired structure number to enter the details page. In addition to the information contained in the result page, there are also the structure source literature, resolution and other information.

Due to too many search results, we only selected some results from the search results page for further study, and obtained their structure and sequence information. A total of 18 selected calcium-ion-binding proteins were identified. Some relevant data for these 18 calcium-ion-binding proteins are shown in Tables 2-1, and the sequences are shown in Appendix 1.

Table 2-1 Selected Calcium binding protein in the research

PDB number	name	Source of biological	Number of polypeptide chains	Amino acid residue base
1A2Q	hydrolase	Bacillus amyloliquefaciens	1	275
1A4G	sialidase	Influenza b virus	1	780
1A2U	nuclease	Staphylococcus aureus	1	135
1A3U	nuclease	Staphylococcus aureus	1	135
1A0T	membranin	Salmonella typhimurium	1	1239
1A0J	serine proteinase	Salmo salar	1	892
1A 0S	Sucrose-specific porin proteins	Salmonella typhimurium	1	1239
1A2T	nuclease	Staphylococcus aureus	1	135
1A 2X	mytolin	Oryctolagus cuniculus	2	189
1A3T	nuclease	Staphylococcus aureus	1	135
1A4Q	hydrolase	Influenza b virus	1	780
1ALC	α-lactalbumin	Yellow baboon	1	123
3FLR	carbohydrate-binding protein	Atlantic horseshoe crab	1	434
3FLP	carbohydrate-binding protein	Limulus polyphemus	1	3038
1NIW	calmodulin	Rettus norvegicus	2	656
6C1D	actin	Rettus norvegicus	4	2759
6C1H	α-skeletal muscle	Rettus norvegicus	3	2752
4HEX	calcium binding protein	Mus musculus	1	279

As shown in Table 2-1, these 18 calcium ion-binding protein sources cover animals, plants, bacteria, and fungi that are unartificially modified natural proteins with one or four subclasses, each containing hundreds of amino acid residues. This index is consistent with the proportion of different classes of calcium ion binding proteins in the PDB database and can be considered widely sample distributed.

According to the chart below we can see the blue area of amino acids is large, in figure 2-6, figure 2-7, figure 2-8 evaluation analysis, purple region is considered allowed region, if appear in red or other regions is an unreasonable amino acid, need to

optimize, show blue color is considered the optimal region, the more amino acid structure is more credible[26]. The following figure can show that this structure has a certain degree of confidence.

Figure 2-6 Sequence 1A0T Laplace conformation

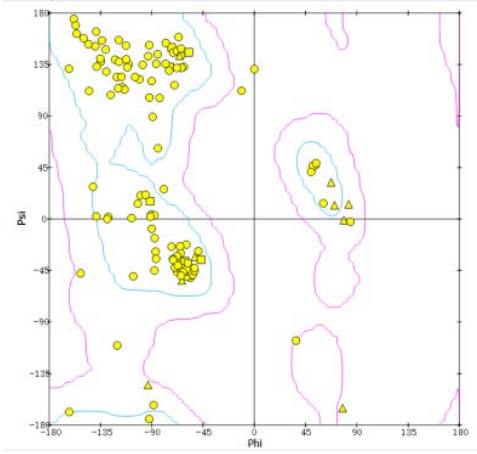


Figure 2-7 Sequence 1A3U Laplace conformation

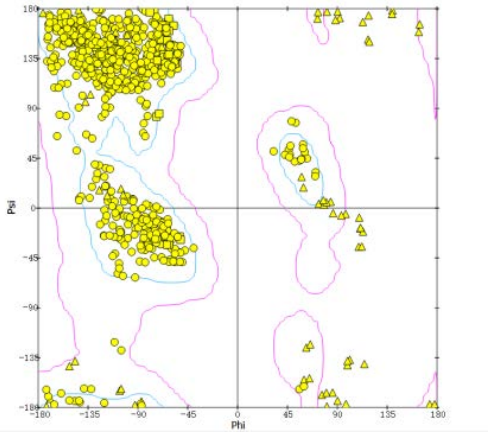


Figure 2-8 Sequence 1A4G Laplace conformation

The following panel shows the six-type surfaces of the two proteins displayed using Discovery Studio[27](Figure 2-9 and Figure 2-10).

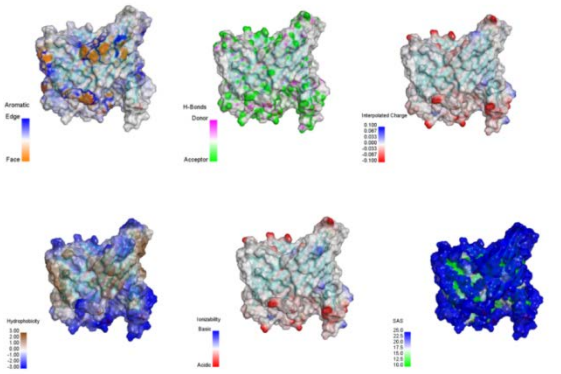


Figure 2-9 Six types of protein surface of 1A0T outer membrane protein

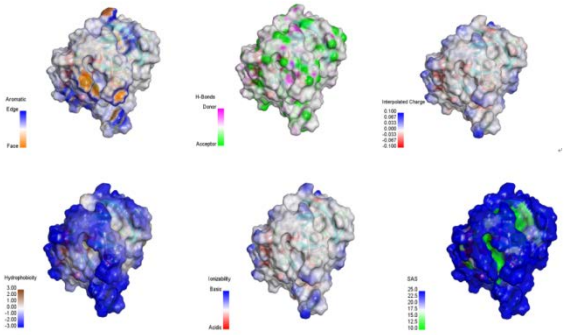


Figure 2-10 Six types of protein surface of 1A3U outer membrane protein

2.3 RESEARCH METHODS

The installation packages for all the software mentioned in this section are downloaded from the Internet.

2.3.1 Sequence study method of calcium-ion-binding proteins

(1) Multiple sequence alignment and phylogenetic studies can use Clustal software for multiple sequence alignment[28], The BioEdit software was then used to edit the results to build a phylogenetic tree.

Table 2-2 Different types of protein surfaces

type	Main form of expression
hydrophobic surface	A surface is created based on the hydrophobicity of the receptor residues, from blue indicating hydrophilic to brown indicating hydrophobic.
Charge surface	Create a surface colored by the interpolated atom charge of the acceptor atoms
Hydrogen bond surface	Create a hydrogen bond type surface, acceptor donor in green and acceptor in cyan
Solvent accessibility surface	Surface coloring is created by solvent accessibility of acceptor residues (from blue to green for burial)
The fragrant surface	Create a blue surface for the aromatic ring rim, and an orange surface for the aromatic torus
Ionized surface	A colored surface is created by the ionization ability of the acceptor residues, from blue for alkaline to red for acid

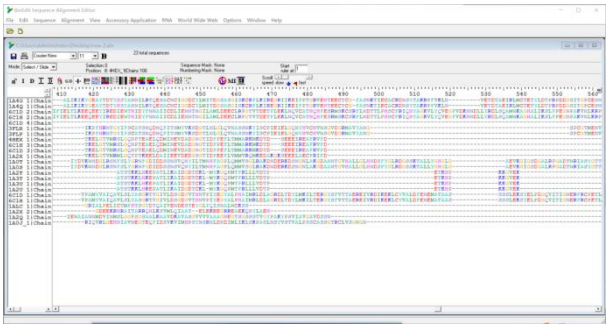


Figure 2-12 Multi sequence comparison result page

(2) Mode-body analysis

Use the MEME website (https: / / meme-suite. Search for the mold, org / meme /)[29], The motif number was set to 5, and the other parameters were maintained by default.

2.3.2 Analysis of physicochemical properties of calcium-binding proteins

In order to provide a good foundation for the further analysis of calcium ion binding proteins, a variety of analytical bioinformatics tools, software and websites are used to analyze the physicochemical properties of three typical calcium ion binding proteins: 1AOT, 1A3U and 1A4G. The specific online website tools used are carried out in Table 2-3 below.

Specifically, using the ProtParam tool (https: / / web.expasy. The org / protparam /) online website is a protein physico-chemical properties analysis tool, which can analyze the various physicochemical properties of calcium ion-binding proteins, obtaining a summary of the physico-chemical properties of calcium ion-binding proteins.

Table 2-3 Bioinformatics online analysis websites

tool	URL
ProtParam	https://web.expasy.org/protparam/
ProtScale	https://web.expasy.org/protscale/
SignalP-5.0 server	https://services.healthtech.dtu.dk/service.php?SignalP-5.0
SOPMA	http://npsa-pbil.ibcp.fr/cgi-bin/npsa_automat.pl?page=npsa_sopma.html
CDD	https://www.ncbi.nlm.nih.gov/cdd
PRED-TMBB	http://bioinformatics.biol.uoa.gr/PRED-TMBB/
Clustal Omega	http://www.clustal.org/omega/
Dali	http://ekhidna2.biocenter.helsinki.fi/dali/

2.3.3 Space structure study method of calcium-ion-binding proteins

(1) Using Py MOL to model the selected calcium ion-binding protein structure and measure the molecular size;

(2) Double structures to compare some of the enzyme using Py MOL[13].

2.3.4 Molecular docking method of calcium ion-binding proteins

(1) Study on calcium-ion-binding protein sites

Due to calcium-binding proteins, most structures in the PDB database also carry calcium ions. Therefore, the binding situation of calcium ion binding protein and calcium ions was analyzed and described by LigPlus[30], In Figure 1-1, the binding site of calcium ions and calcium-binding proteins is shown in Figure 2-13.

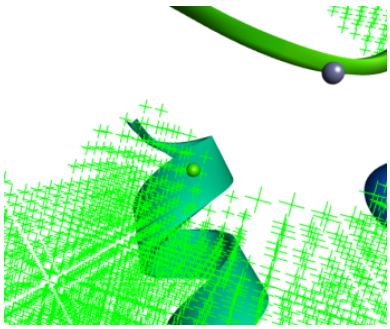


Figure 2-13 Binding site of calcium ion and calcium binding protein

(2) Docking of calcium-ion-binding proteins with protein inhibitors

Many calcium-binding proteins have protein inhibitor binding sites[16], However, no docking structures have been found in the PDB database, and only the structures of these inhibitors can be found, so predicting the docking situation of the inhibitors and calcium ion-binding proteins is required for relevant studies. In this paper, hydrolase (PDB 1A2Q), sialidase (PDB 1A4G) and sugar binding protein (PDB 3FLR) were predicted as examples. The PDB files of this structure were downloaded and docked with (1EQG, 1FVV, 1O86) using ZDock to see the docking results.

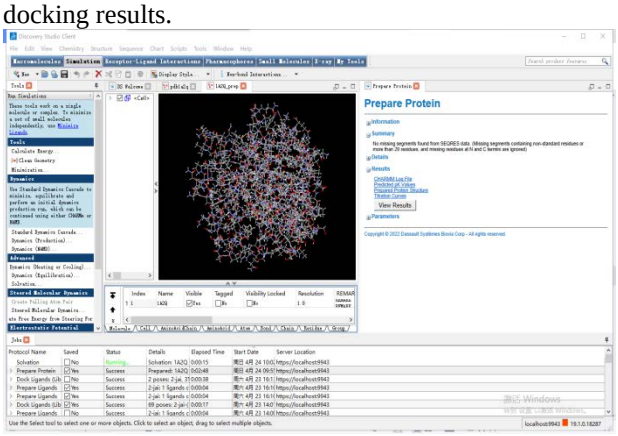


Figure 2-14 Prepare kinetic simulation molecules

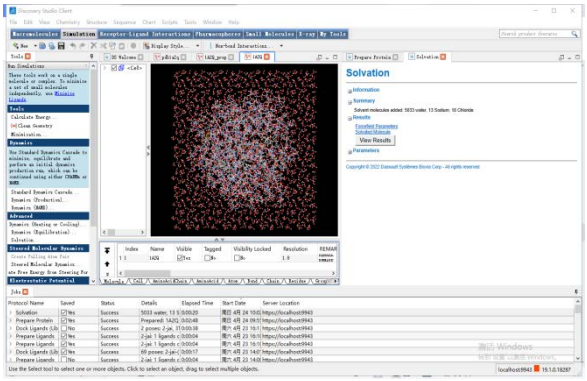


Figure 2-15 1A2Q protein solvation

3. RESULTS AND DISCUSSION

3.1 SEQUENCERESULTS OF CALCIUM ION-BINDING PROTEINS

3.1.1 Analysis of calcium-binding protein mode

The results are shown in Figure 3-2, it can be seen that each calcium-binding protein contains module 2-3 modules, some of the calcium-binding proteins have module 1, and most of the calcium-binding proteins contain module 3. The four calcium-binding proteins from nucleases also have modes 5, which may be related to some of their respective properties. The same mode in the respective existing proteins should fold into similar secondary structure or super-secondary structures, which helps to predict the protein 3-dimensional structure using fold recognition.

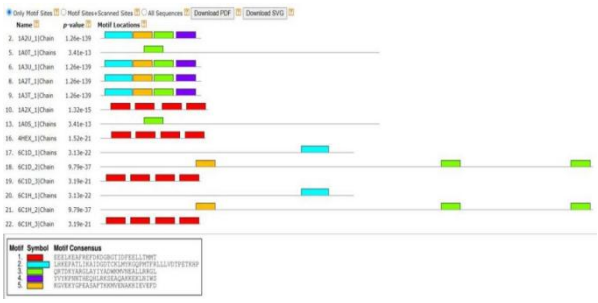


Figure 3-2 motif calcium binding protein of amylase datasets

3.1.3 Analysis of physicochemical properties of calcium-binding proteins

After analyzing the three typical amino acid sequences by ProtParam tool, the results are summarized in Table 3-1. The results show that the two calcium-barrel protein structures of 1AOT have similar properties of physicochemistry to 1A3U, with isoelectric points around 6 and an instability coefficient around 24. And has a-helical transmembrane 1A4G protein structure and the other two proteins physical and chemical properties gap, isoelectric point in about 9.4, while the three calcium ion binding proteins are stable protein (instability coefficient <40), but its instability coefficient of 38.69, significantly higher than the other two calcium ion binding protein 22.43 and 26.70, apparently-helix 1A4G transmembrane structure on the overall physical and chemical properties, make it become more unstable. At the same time, all three proteins are hydrophilic proteins (the total mean affinity coefficient is negative).

Table 3-1 Physicochemical properties of amino acid sequences of three typical proteins

PDB number	1AOT	1A3U	1A4G
Number of amino acids / aa	413	149	390
molecular mass /Da	45290.86	16815.28	43370.22
isoelectric point pI	5.13	9.42	7.26
Fat coefficient	63.15	66.85	65.08
Total mean water affinity coefficient	-0.473	-0.872	-0.438
Instable coefficient	22.43	26.70	38.69

Val (V)	17	4.1	8	5.4	14	3.6
Pyl (O)	0	0.0	0	0.0	0	0.0
Sec (U)	0	0.0	0	0.0	0	0.0

3.2 Results of the spatial structure of calcium-ion-binding proteins

Figure 3-3: sequence comparison window

Various calcium ions were structure-designed using P y MOL to find their multi-helix and beta-fold. The results for the various calcium ions associated with the protein are shown in Fig.Figure 3-4,3-5 By observing the structural characteristics, we find that the calcium ion structures can be divided into two categories. Although the protein sequences are diverse, there is a conserved structure suitable for the binding point of the enzyme and the matrix, that is, where the active center of the enzyme lies, which is the TIM barrel (domain A).

1A3U, 1A3T, 1A2U, and 1A2T consists of four identical subunits, each with a similar spatial structure that can catalyze the decomposition of the four molecules simultaneously, thereby improving the

utilization efficiency of their species[32]. These two structures were compared with P y MOL, using P y MOL pair 6C 1H and 6C 1D with an RMS value of 0.478 <3, so that their structures share common features and coincidence, and they are closer on the phylogenetic tree and can be considered closer. Furthermore, after grouping animal, plant, and bacterial-derived calcium ions, multiple cross-comparisons were performed within or between groups, including 1A3U, 1A3T, and 1A2U, and 1A2T, and only individual subgroups were considered for structural comparisons. RMS> 3 for different components but usually RMS <3 in the same group. Although calcium exchange proteins have common characteristics in the structure of different species, they still differ in details, related to their original species; the structural similarities within the same group are also consistent with sequence and structural relationship and the conclusions of sequence studies.

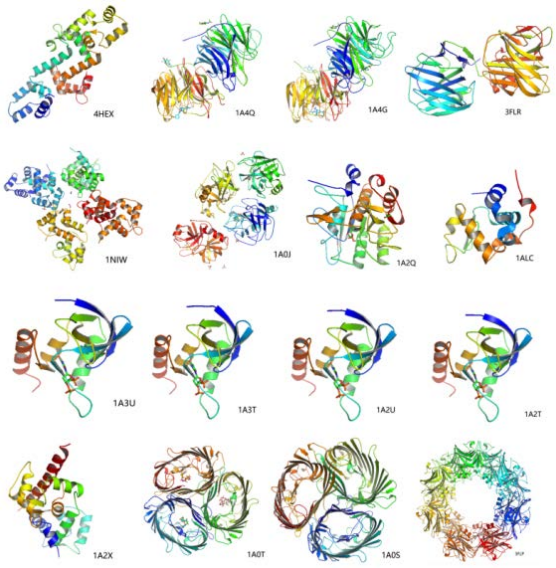


Figure 3-4 Spatial structure of selected calcium binding protein type 1

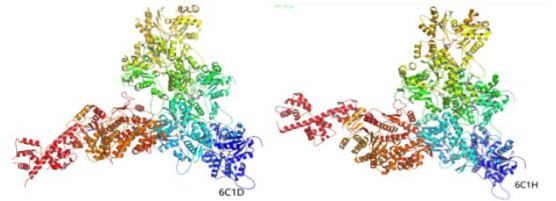


Figure 3-6 Spatial structure of selected calcium binding protein type 2

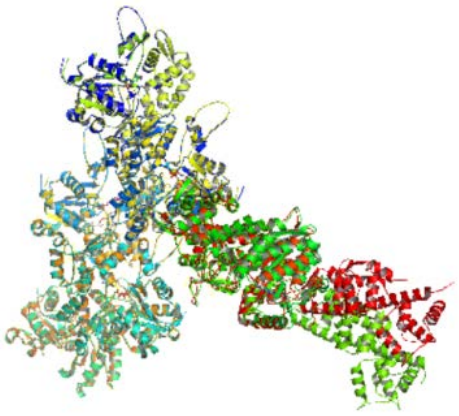


Figure 3-7 Calcium binding protein type 2 superposition results

As can be seen from the figure above, the structure of protein type 1 and the structure of protein type 2 are similar in composition characteristics. The only difference is that the two ends of the long ellipsoid axis are-helix, not-folding, namely, the outside of the protein is surrounded by a circle of various direction-helices, and the inside is the TIM barrel, and also the catalytic site. Given that the phylogenetic tree showed that individual protein types 1 share a common ancestor with protein type 2, this should be able to explain why their structures do not differ much. The results of structural superposition of protein type 2 are shown in Figure 3-7, and it is found that they can be completely superimposed, even for the 6C1H of the multiple subunits, the 6C1D and 6C1H structure alignment of the subunit are highly similar (partial RMS=0.478 <3 on the alignment). This highly confirms that the calcium ion-binding protein structure is highly conserved in different species. Since the structures of protein types 1 and 2 are so conserved, it is believed that if there is a sequence of calcium-binding protein with an unknown 3 D structure, fold recognition is also a better way to predict its 3 D structure besides homology modeling.

3.3 MOLECULAR DOCKING RESULTS OF CALCIUM ION-BINDING PROTEINS

In the process of molecular docking, a variety of non-covalent bond forces are generated between the receptor and the ligand. Although their action size is very slight compared with the covalent bond, the stacking and accumulation of these non-covalent bond forces and the ligand forces makes the binding conformation between the receptor and the ligand stable. Opening in Py MOL found that these inhibitors are not small in volume, considering that the calcium ion-binding protein is also a high molecule, which will cause great hindrance to the binding of the protein and the inhibitor.Moreover, it can be seen from the figure that the binding site of these inhibitors with the calcium ion-binding protein is on the TIM barrel and occupies the active center of

the protein, so it can be concluded that these inhibitors may be a competitive inhibitor.

3.3.1 Study of binding to transferase (1FVV)

Calcium ion binding protein (PDB 3FLR) after simple water preparation, run the protein molecule, by finding the strongest hydrophobic receptor cavity and enlarge to better docking, while the protein inhibition transferase (PDB 1FVV) docking, prepared calcium ion binding protein and prepared protein inhibitors, you can see 96 sites successful docking, in figure 3-8, docking prediction result is shown in figure 3-9, docking site in figure 3-10.

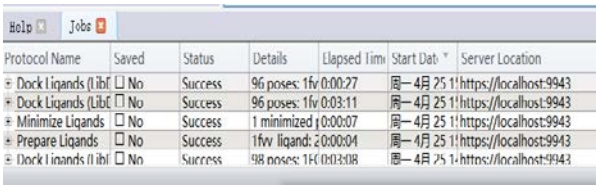


Figure 3-8 Work diary of successful docking between 3FLR and 1FVV

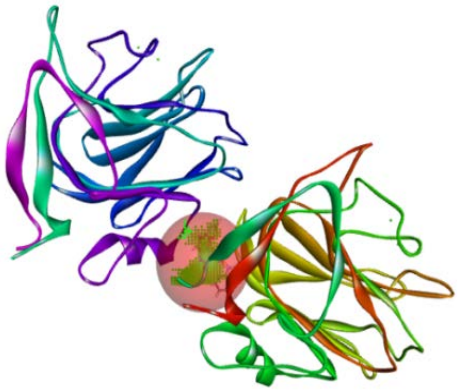


Figure 3-9 3D image of 3FLR and 1FVV docking prediction results

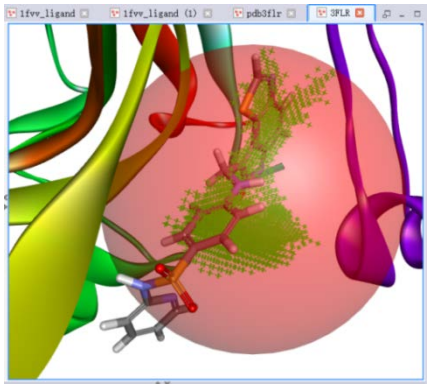


Figure 3-10 3FLR and 1FVV docking sites

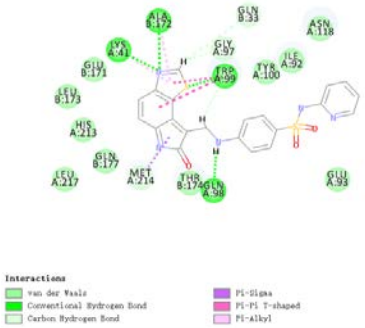


Figure 3-11 2D chart of 3FLR and 1FVV docking prediction results molecular docking force

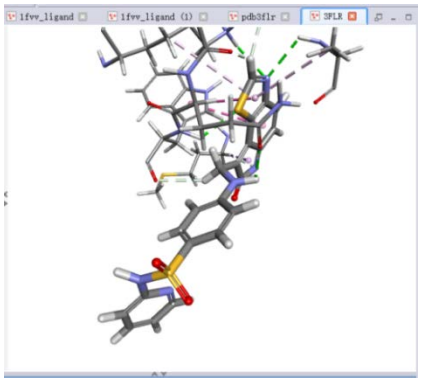


Figure 3-12 3D image of interaction force between 3FLR and 1FVV docking ligand

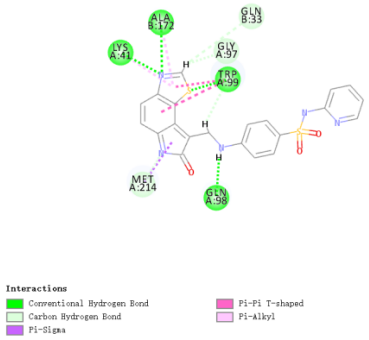


Figure 3-13 2D image of interaction force between 3FLR and 1FVV docking ligand

The same operation docked the calcium-binding protein (1A4G) to the ligand 1FVV. The docking site results are shown in Figure 3-15, showing that the sites are all on the TIM barrel.

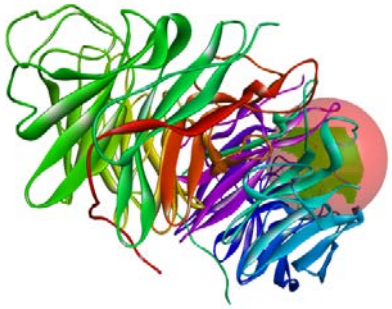


Figure 3-14 3D3D image of prediction results of 1A4G docking with ligand 1FVV

Figure 3-15 1A4G and ligand 1FVV docking site

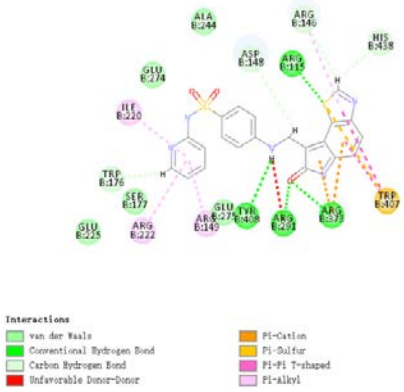


Figure 3-16 2D chart of 1A 4G and 1FVV docking prediction results molecular docking force

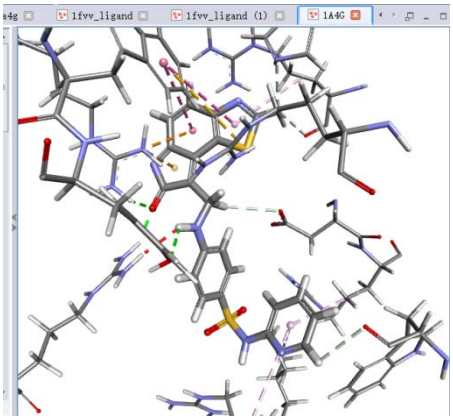


Figure 3-17 3D image of interaction force between 1A4G and 1FVV docking ligand

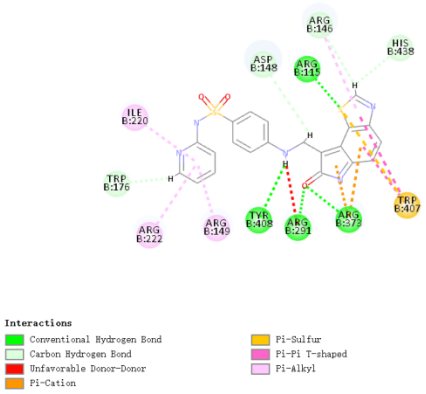


Figure 3-18 2D image of interaction force between 1A4G and 1FVV docking ligand

3.3.2 Study on binding to ibuprofen (1EQG)

The docking of the calcium-ion-binding protein (1A4G) and ibuprofen (PDB number 1EQG) is continued as described above. As shown in Figure 3-19.

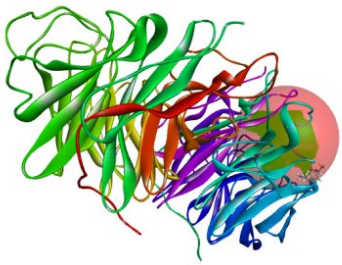


Figure 3-19 3D image of prediction results of 1A4G docking with ligand 1EQG

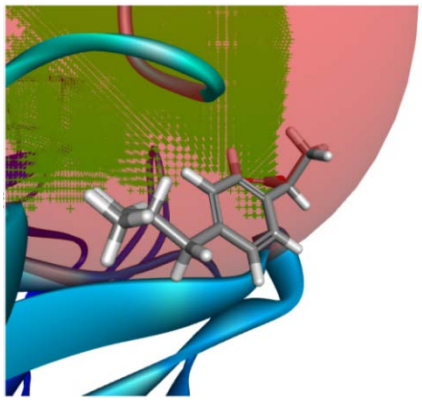


Figure 3-20 1A4G and 1EQG docking sites

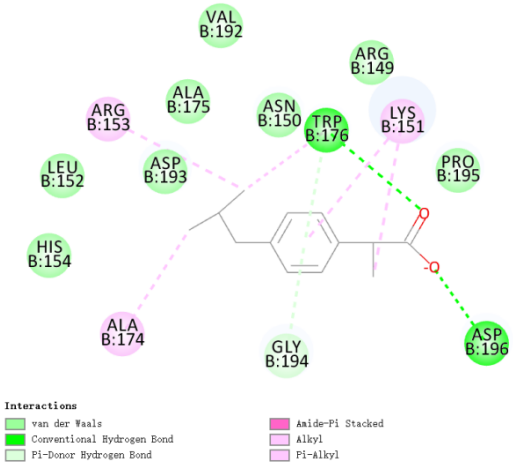


Figure 3-21 2D chart of 1A4G and 1EQG docking prediction results molecular docking force

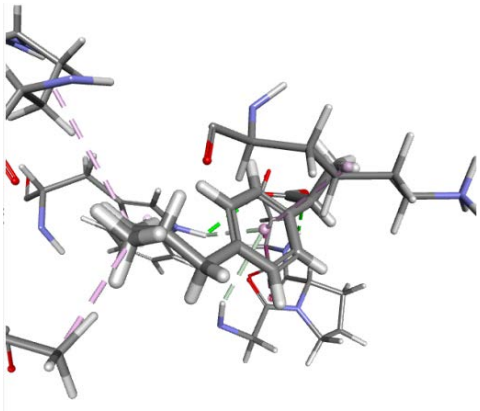


Figure 3-22 3D image of interaction force between 1A4G and 1EQG docking ligand

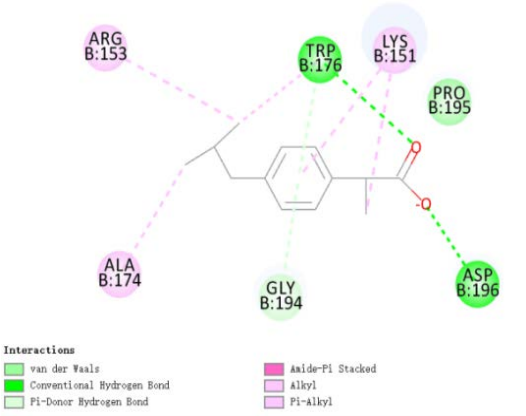


Figure 3-23 2D image of interaction force between 1A4G and 1EQG docking ligand

Figure 3-24 3D image of prediction results of 1A2Q docking with ligand 1EQG

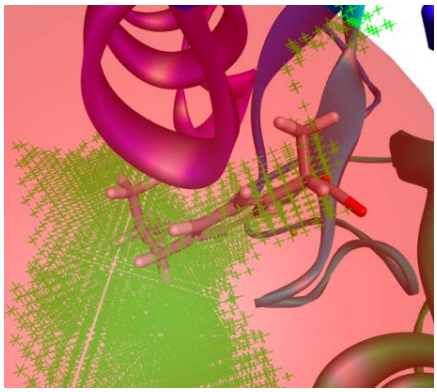


Figure 3-25 1A2Q and 1EQG docking sites

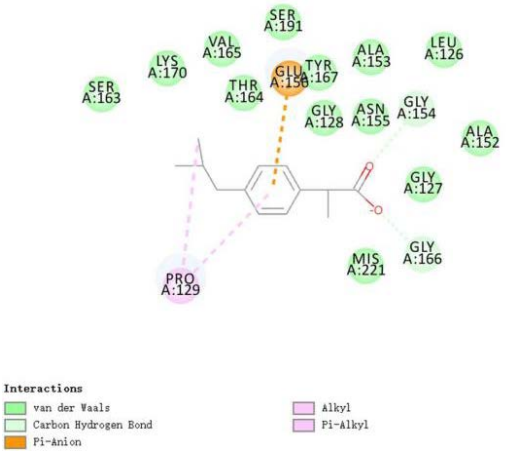


Figure 3-26 2D chart of 1A2Q and 1EQG docking prediction results molecular docking force

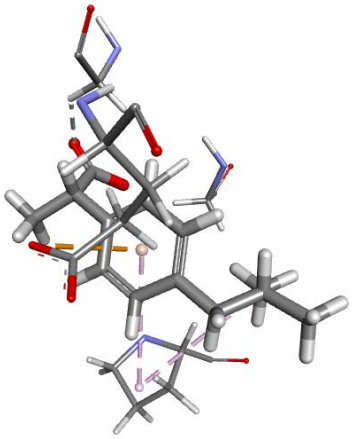


Figure 3-27 3D image of interaction force between 1A2Q and 1EQG docking ligand

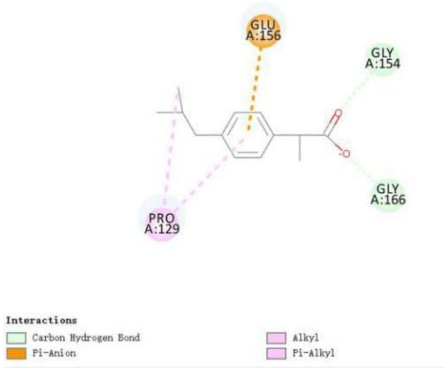


Figure 3-28 2D image of interaction force between 1A2Q and 1EQG docking ligand

3.3.3 Study of binding to hydrolase (1O86)

Repeated operation yields the following docking results with hydrolase (1O86) as shown in Figure 3-34:

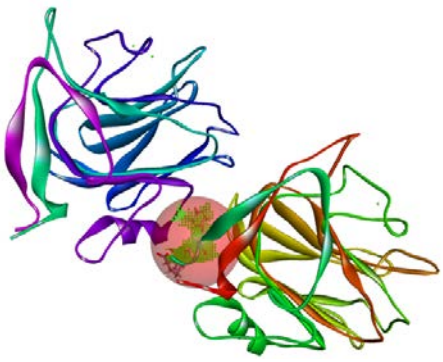


Figure 3-29 3D image of prediction results of 3FlR docking with inhibitor 1O86

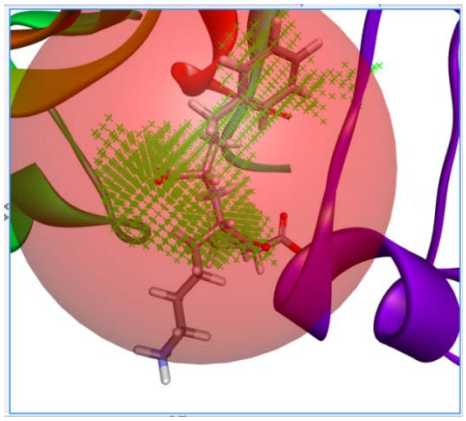


Figure 3-30 3FLR and 1O86 docking site

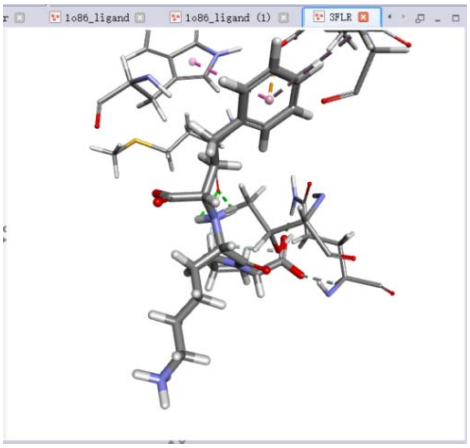


Figure 3-31 3D image of interaction force between 3FLR and 1O86 docking ligand

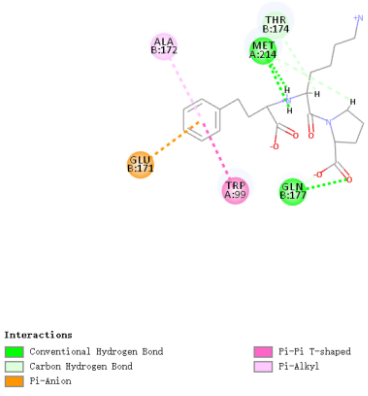


Figure 3-32 2D image of interaction force between 3FLR and 1O86 docking ligand

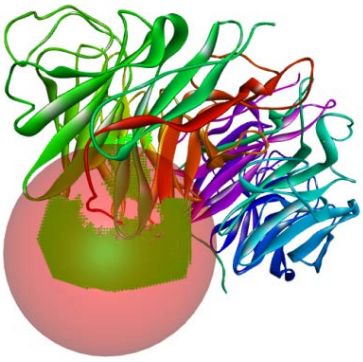


Figure 3-33 3D image of prediction results of 1A4G docking with inhibitor 1O86

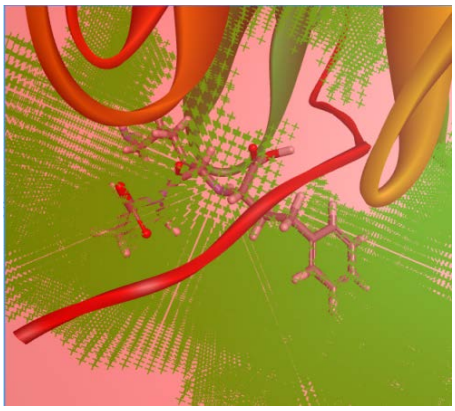


Figure 3-34 1A4G and 1O86 docking site

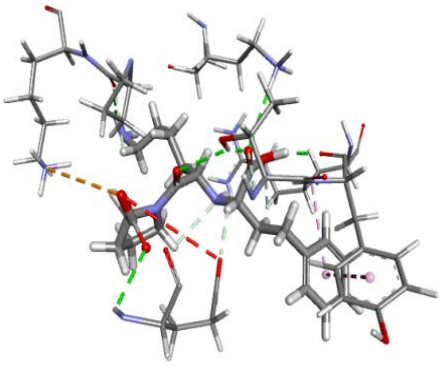


Figure 3-35 3D image of interaction force between 1A4G and 1O86 docking ligand

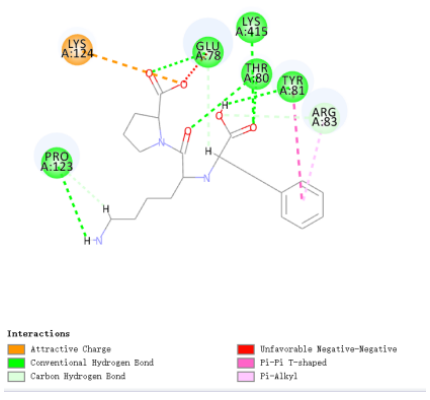


Figure 3-36 2D image of interaction force between 1A4G and 1O86 docking ligand

As can be seen from the figure above analysis, the three small molecule ligands after docking are located in the inside of the bucket protein, meet the calcium ion binding protein more likely active center position, and the three small molecule ligands and the calcium ion binding protein binding force and interaction force may be strong, because the three small molecule ligand docking scores are positive, it will produce the possibility of interaction is greater, so the three small molecule ligands can be used as calcium ion binding protein ligand. The molecular docking scores are shown as follows:

Table 3-3 scoring results of 1A2Q molecular docking

1A2Q molecular docking scoring results			
Small molecule material	transferase	ibuprofen	hydrolase
Libdock E nergy	109.693	75.404	113.017

Table 3-4 scoring results of 3FLR molecular docking

3 Results of F L R molecular docking scoring			
Small molecule material	transferase	ibuprofen	hydrolase
Libdock E nergy	136.072	87.406	129.877

Table 3-5 scoring results of 1A4G molecular docking

1A4G molecular docking scoring results			
Small molecule material	transferase	ibuprofen	hydrolase
Libdock E nergy	118.465	87.736	121.344

The higher the Libdock E nergy score value in the above results, the closer the receptor binds to the ligand, the more ideal the binding conformation, and the greater the inhibitory effect of small molecule substances. This shows that, based on the above scoring results, the natural small molecule ligands with the highest scoring function for each calcium ion-binding protein were selected for molecular docking analysis.Whether these small-molecule ligands are the natural binding inhibitors of the three calcium-ion-binding proteins and their inhibition size is further verified by microbial experiments.

3.4 RESULTS OF MOLECULAR MODIFICATION OF CALCIUM ION-BINDING PROTEINS

Using 1A2Q and 1A2U as examples, a single point saturation mutation of its module 1 and calculated energy values, with the module 1 sequence of 70th to 98th amino acid residues. The results for the highest and lowest five energy groups are shown in Tables 3-6. The number 1-5 ranked mutations with negative mutations makes the protein more stable, while the

next five mutations with positive mutations makes it unstable. Therefore, the first five results, especially the first one, should be preferred if further experimental studies are needed.

It can be seen from the following table after the virtual amino acid mutation mutation value in the process of five heating rise to a certain extent, represents the thermal stability of the overall protein increased, representing the position of the amino acid residues free energy decreased, also set off the conclusion of the overall protein structure stability increased, represents the virtual amino acid mutation makes the overall thermal stability of protein increased.

Table 3-6 Result of 1A2Q molecular modification(Stability)

index numbe r	Mutant form	Mutant energy (kal / mol)	influence
1	A:ALA144>TRP	-1 89	stabilize
2	A:ALA144>ARG N	-1.71	stabilize
3	A:ASP140>TRP	-1.58	stabilize
4	A:ALA144>TYR	1.34	stabilize
5	A:ALA144>GLU H	-1.29	stabilize
121	A:VAL143>GLN	9.52	instabilit y
122	A:VAL143>PRO	25.51	instabilit y
123	A:ALA142-PRO	31.01	instabilit y
124	A:ALA144>PRO	33.85	instabilit y
125	A:LYS141>PRO	45.12	instabilit y

Table 3-7 Result of 1A2Q molecular modification(Binding)

index number	Mutant form	Mutant energy (kcal / mol)	influence
1	A:ALA152>HSC	-1.9	stabilize
2	A:ALA152>LEU	-1.73	stabilize
3	A:ALA153>TYR	-1.7	stabilize
4	A:ALA153>PHE	-1.67	stabilize
5	A:ALA153>HSC	-1.49	stabilize
196	A:GLY154>GLN	3.84	instability
197	A:GLY154>ASP	3.85	instability
198	A:GLY154>THR	4.72	instability
199	A:GLY154>VAL	4.92	instability
200	A:GLY154>TYR	5.09	instability

Table 3-8 Result of 1A2U molecular modification(Stability)

index number	Mutant form	Mutant energy (kal / mol)	influence
1	A:HIS46>TRP	-5.12	stabilize
2	A:HIS46>TYR	-4.53	stabilize
3	A:HIS46>LEU	-4.27	stabilize
4	A:HIS46>PHE	-4.21	stabilize
5	A:LYS48>TRP	-4.06	stabilize
121	A:GLY50>GLU	1.14	instability
122	A:L YS49>PRO	1 59	instability
123	A:GLY50>VAL	2.01	instability
124	A:PRO47>ARG	2.58	instability
125	A:GLY50>PRO	12	instability

Table 3-9 Result of 1A2U molecular modification(Binding)

index number	Mutant form	Mutant energy (kcal / mol)	influence
1	A:SER59>ARGN	-2.54	stabilize
2	A:ALA58>HIS	-2.22	stabilize
3	A:GLY55>ASPH	-2.15	stabilize
4	A:SER59>GLN	-1.94	stabilize
5	A:GLY55>ARGN	-1.91	stabilize
246	A:GLU52>SER	0.59	instability
247	A:GLU52>ALA	0.61	instability
248	A:GLU52>GLY	0.64	instability
249	A:SER59>ARG	0.86	instability
250	A:GLY55>MET	1.58	instability

3.5 MOLECULAR DYNAMICS SIMULATION RESULTS OF CALCIUM ION-BINDING PROTEIN

RMSD is the molecular offset distance, which can reflect the stability of the system during the simulation process, while RMSF is the offset distance of an amino acid relative to the reference conformation over a period of time, representing the average situation of the structure change on time. Because the analytical conditions of the crystal structure in the PDB are not all meet the required conditions, it is not suitable for directly regarded as a reference conformation, and the first frame conformation is the result of heating (289.45K to 304.36K), equilibrium, belongs to the relatively stable at the set temperature and pressure, so this study as a benchmark to calculate RMSD and RMSF, the results are shown in Figure 3-37, Figure 3-38.

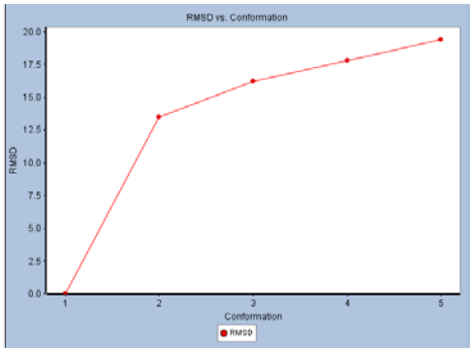


Figure 3-37 Relation between RMSD and configuration of 1A2Q

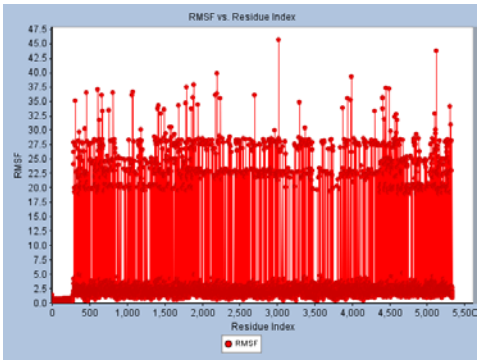


Figure 3-38 Relation between RMSF and amino acids residues of 1A2Q

These two maps can show that the RMSD is increasing and the structure changes greatly, so the thermal stability of the enzyme still needs to be improved; The RMSF of different amino acid residues of 1A2Q fluctuates greatly, and the RMSF value of the C end is generally large. Considering the similarity of the sequence and structure of calcium ion-binding proteins, it proves that the C end may play a major role in the thermal stability of calcium ion-binding proteins.The kinetic simulation results appear in Figures 3-40.

Figure 3-39 Paricle Mesh Ewald method is used for electrostatics

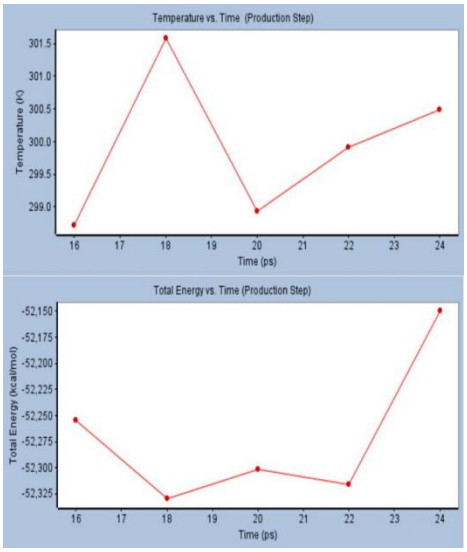


Figure 3-40 Standard dynamic simulation results of 1A2Q

3.6 DISCUSSION

This study achieved the purpose of a variety of protein structure bioinformatics research method, studied the calcium ion binding protein and obtained a series of conclusions, preliminary demonstrated the series of protein structural information, in different structure levels, using bioinformatics research protein related ion calcium, can further enrich, improve and perfect the bioinformatics method. This idea not only helps us to address the current and future problems in the study of calcium-ion-related proteins, but also provides a methodological reference for the studies of other enzymes and other proteins.

4. CONCLUSION AND OUTLOOK

4.1 CONCLUSION

This paper successfully uses various bioinformatics methods to study the biological information based on the existing sequence and structural information, and obtained a series of conclusions about the structure and function of calcium ion binding proteins. The sequence can be found that different species (animals, plants, bacteria) different species of calcium ions and protein related sequences are similar, that is, closely related, but different species of calcium ions and protein related genes are also close, part of the calcium ions may be caused by mutated calcium ions. The structure of the calcium ion exchange protein is found to be very conserved. They have a typical cause-helical surround-coiled active center, called the TIM barrel structure.Different types of calcium-ion proteins can be produced from a species (animals, plants, bacteria), but different calcium-ion-binding proteins (a single matrix containing tetramerases) have very similar spatial structures. Thus conserved structural features were selected to simulate homology, fold recognition protein-related 3D structure prediction methods of unknown calcium ion sequences.In this paper, we identify several potential single-point mutations in amino acids that may make 1A2Q, 1A2U and 1A2U more stable. The RMSD and RMSF curves calculated after the LLM simulation of 1A2Q show that 1A2Q is not stable during heating up, and the C terminus has a greater effect on its stability. So far, this paper has obtained some conclusions about the structure and function of calcium ion binding proteins, which has confirmed the availability of the current bioinformatics research methods in the study of calcium ion binding proteins, and initially formed a set of ideas of using bioinformatics means to study proteins.

4.2 OUTLOOK

The multiple sequence alignment algorithm (based on software such as ClustalX and ClustalW) is a method to further optimize the results based on the gradual alignment algorithm, which can quickly predict potential calcium ion binding protein sites quickly. We read the scientific literature and trained on these

data to obtain the conclusion that the sensitivity was 69.67% and the specificity was 90%.From our prediction results, we know that only the relevant operations of predicting calcium binding sites in a protein is the protein sequence has no information on protein structure information. We performed a PDB analysis of the collected data on the experimentally validated calcium-ion-binding proteins.

Expecforward to future to meet the needs of modern medicine and biology for protein research.The prediction methods of calcium ion binding protein sites need to be further studied and developed, To collect large amounts of more accurate experimentally validated data as our training set, The ClustalW algorithm also needs to be improved in more multiple practices, Our ideal performance and predictive accuracy require finding faster methods to build predictive models, Experimalists and bioinformaticians who can work together to implement experimental validation of good prediction results can improve the tool accuracy of predicting calcium-binding proteins, And it can help us to expand the knowledge of protein structure.

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The Reform of E-business Professional Training Mode Based on the Integration of Industry and Education

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Abstract: With the rapid development of e-business industry, the demand for e-business talents is growing, and the talent cultivation is relative single in colleges and universities, which makes the contradiction between the market demand and the supply of talents stand out. This article aims mainly at the problems existing in the cultivation of e-business major
in higher vocational colleges, starting from the demonstration, through the research based on our school, puts forward the reform strategy of deepening the cultivation mode of e-business major under the background of the integration of industry and education.
Keywords: integration of industry and education; e-business; talent cultivation

INTRODUCTION

From the end of the privatization of the Internet to the present, after more than 20 years of development, the Internet can be said to have changed the most important technologies and applications of society and commerce. Our life has been unable to resist the Internet, because it brings convenience, enjoyment and value. We can do shopping, study, entertainment and even apply for jobs without leaving home. These have penetrated into every detail of life, especially under the influence of the epidemic in 2020, which has accelerated the rapid development of webcast and short video platforms. This is undoubtedly a new bright spot in the industry and a new market demand. At the same time, it also puts forward new requirements for the training of e-commerce professionals.

1. INTRODUCTION TO INTEGRATION OF INDUSTRY AND EDUCATION

The research on the integration of industry and education abroad is earlier than that in China. It has formed its own unique way in the mode, method and innovation of the integration of industry and education, which can give full play to the role of laws, regulations and industry associations. Domestic research on the integration of industry and education is relatively late. From the earliest academic papers of HowNet in 2007 to now, after more than a decade of development, the content of the integration of industry and education is mostly theoretical and empirical research, and there are relatively few empirical research. In addition to regional economic differences, the examples of individual higher vocational colleges and universities are not universally popularized and cannot be copied.

In order to further deepen the integration of industry and education, the state has issued a number of documents on vocational education and the integration of industry and education since 2014, providing a very strong guarantee and effective guidance at the policy level. Vocational colleges focus on cultivating students' applied skills, weaken theoretical knowledge, and have high requirements for students' practical ability. The quality of students' training should meet the requirements of employing enterprises, which requires vocational colleges to understand the professional talent needs of enterprises, conduct corresponding talent research, understand the skills required by enterprises for talents, set up corresponding professional courses, cultivate their comprehensive quality and ability, cooperate with industries, support each other Promote, take the industry as the market, rely on the educational environment of the school, integrate the comprehensive development of production, learning and research, and form a school running mode of "you have me, I have you". Such integration of production and education will help to improve the comprehensive strength of the school. However, the major of e-commerce is relatively developed at present
as a good and popular major is closely related to industrial development. The talent training mode of e-commerce major is worth focusing on.

2. CURRENT SITUATION OF E-COMMERCE PROFESSIONAL TRAINING

This paper takes Henan Polytechnic Institute of industry as an example to analyze the cultivation of e-commerce professionals. The e-commerce major of our college was established in 2005. During the ten-year development period, we paid attention to the cultivation of theoretical knowledge. Due to the small number of students enrolled, there was no professional experiment and training base and equipment. In 2015, we conducted a follow-up survey of some graduates and found that most of the graduates in 2015 and before were not engaged in e-commerce. We also began to think about where

there were problems. The feedback of graduates told us that there were too few practical teaching to meet the requirements of employers. Then we began to visit the surrounding provincial demonstration colleges and surrounding enterprises to understand the actual situation, The first training room of e-commerce has also been established to provide students with more opportunities for hands-on practice and strengthen their practical skills; And preliminarily negotiate school enterprise cooperation with some enterprises; We also actively pay attention to, discuss and prepare for various skill competitions in higher vocational colleges, appropriately adjust the curriculum system in the talent training program, and develop the e-commerce major as the key major of the college, so as to gradually adapt to the needs brought by industrial development changes, the current main development status is as follows:

2.1 The Experimental Training Conditions Are Relatively Complete

After several years of key investment, our college has invested in the establishment of e-commerce operation laboratory, network marketing laboratory, cross-border e-commerce laboratory, e-commerce training room and ERP laboratory. Most of the laboratories are cloud laboratories, which are convenient for management. 10 sets of teaching system software are purchased, which basically meet the teaching needs and can exercise students' hands-on operation ability.

2.2 Initially Establish 4 Off Campus Training Bases

The earliest school enterprise cooperation is the joint development of relevant teaching materials by both sides. In 2015, three e-commerce professional teaching materials were jointly developed. From 2016, they have participated in the customer service or commodity sorting internship on the double ten front line every year for 3 weeks to 6 weeks. In 2020, two new internship positions have been added, one is the internship of online shop art, the other is the internship of online live broadcast, although the number demand is small, But it is also a manifestation of adapting to market development and diversification of school enterprise cooperation.

3. PROBLEMS IN THE TRAINING OF E-COMMERCE PROFESSIONALS

After nearly five years of development, the training quality of e-commerce professionals in our college has been improved to meet the needs of some employers, but we also know that the e-commerce industry is developing too fast and changing too much, and the e-commerce professional training program is adjusted once a year, which will inevitably show that the e-commerce professional training program lags behind the industrial development, The contradiction between the talent demand of e-commerce enterprises and the supply of e-commerce professionals is caused. Compared with the brother colleges outside the province, the gap is still very large. The main problems are as follows:

3.1 UNREASONABLE STRUCTURE OF TEACHING STAFF

None of the teachers majoring in e-commerce graduated from e-commerce, but transferred from other majors in trade, management and economics. They did not have a formal and systematic study of e-commerce and lacked an overall understanding; In addition, teachers are relatively young, with low professional titles and relatively few senior professional titles. Except for some teachers who have practical experience in enterprises, other teachers directly enter the education industry after graduation. Their study of e-commerce is limited to theoretical research, lack of famous teachers, and no professors with high comprehensive professional ability to lead the team.

3.2 EXPERIMENTAL TRAINING EQUIPMENT CANNOT KEEP UP WITH PROFESSIONAL DEVELOPMENT AND CHANGES

With the rapid development of new media, many e-commerce companies increase new businesses such as short video, live broadcast and soft text editing from online sales and after-sales. Our training equipment was purchased a few years ago. These configurations can meet the basic operation of store decoration, operation and online customer service before. For live broadcast and short video of new media business, it is relatively backward. If there is a phenomenon of software incompatibility, As a result, some software cannot run, students' relevant practical exercises cannot be completed, and the quality of teaching is greatly reduced.

3.3 THE INTEGRATION OF INDUSTRY AND EDUCATION ONLY STAYS AT THE PRIMARY INTEGRATION STAGE

The school has realized that self enclosed development cannot meet the needs of social development, and carried out research and preliminary cooperation with enterprises. The content of cooperation is limited to school enterprise cooperation textbooks and practical opportunities. Although the first step has been taken in school enterprise cooperation, the integration of production and education is relatively low, and the number of cooperative enterprises is small, which cannot reflect the overall needs of most enterprises. Therefore, the teaching content can only be adjusted in some courses, Carry out adjustment and reform.

4. EXPLORATION ON THE REFORM OF THE TRAINING MODE OF E-COMMERCE PROFESSIONALS BASED ON THE INTEGRATION OF INDUSTRY AND EDUCATION

Under the strategic deployment of the national implementation of regional economic integration development, Henan should make full use of its advantages, accelerate the development of modern high-end service economy, actively develop

e-commerce, and promote the integrated development of advanced manufacturing and modern service industries; Expand the effective supply of social services such as leisure, education and training, and jointly build a number of high-level service industry clusters and innovation platforms. Nanyang cross border e-commerce Industrial Park was successfully selected as a provincial e-commerce demonstration park. Our institute is located in such a superior geographical location, which can give full play to regional economic advantages, develop e-commerce and cross-border e-commerce trade, and adapt to the transformation and upgrading of local industrial structure.

In combination with the training objectives of our e-commerce major, we should pay attention to students' Ideological Education and moral education, establish correct values and social views, cultivate innovation, entrepreneurial awareness and professional skills, and cultivate high-end technical and skilled talents with entrepreneurial spirit and ability who can engage in marketing promotion, operation management, customer service and other work. Our college should fully explore the talent training mode of e-commerce major under the background of deepening the integration of industry and education, so as to solve the existing professional training problems.

4.1 DEEPEN THE DUAL COLLABORATIVE EDUCATION MECHANISM OF "SCHOOL + INDUSTRY ENTERPRISE"

Cooperate with jd.com and other enterprises to establish an e-commerce professional construction committee, improve the organizational structure of school enterprise cooperation, dynamically track the changes of modern service job groups, and carry out multi-directional school enterprise cooperation; Give full play to the geographical advantages, serve the local economy, and drive the employment of regional talents; Cooperate with the national e-commerce Vocational Education Steering Committee, integrate high-quality resources, and jointly study and formulate scientific and standardized e-commerce professional training programs, so as to promote the deep integration of industry and education.

4.2 DEEPEN THE TALENT TRAINING MODE OF "TWO SPECIALTIES, FOUR DIRECTIONS + PHASED COMBINATION OF WORK AND STUDY"

The main performance of modern commerce and trade is to promote the intelligent upgrading of the industry through e-commerce, combine the construction objectives of digital Nanyang and the construction characteristics of e-commerce major of our college, and focus on "two specialties and four directions", which refers to the cooperative development of e-commerce major and international commerce major, and drive the development of international commerce based on the development of e-commerce; Four directions refers to the direction of professional employment, including e-commerce operation, cross-border e-commerce, online shop art and new media operation, docking with the new requirements of modern service development, promoting the optimization and upgrading of industrial structure, and integrating professional resources.

According to the process of professional knowledge from shallow to deep, we should take the combination of work and study as the starting point of the training mode reform of e-commerce major in higher vocational colleges, carry out active exploration and practice, and organize students to go to cooperative enterprises for cognitive practice, professional practice, post practice, etc. by using weekends, holidays, 6.18, double 11 and winter and summer holidays, while working and learning. With the help of simulation software in the school, through one look, two use, three learning and four doing, we can achieve learning by doing and learning by doing, and implement the teaching plan spirally to achieve the professional training goals. The college implements a complete credit system, and students can choose optional courses that meet their own personalized development; Through participating in various professional competitions at all levels ("Olympic Cup" national mobile commerce skills competition, national vocational colleges e-commerce skills competition, etc.), we can carry out professional learning, actively participate in various college students' innovation and entrepreneurship competitions, substitute competition for practice, and integrate quality education and entrepreneurship education into the professional teaching process.

Carry out the pilot of 1+x cross-border e-commerce operation certificate system, integrate the certificate training content with professional courses, design the teaching content of corresponding course modules, stimulate students' autonomous learning, encourage students to obtain corresponding vocational skill level certificates, and replace corresponding credits, so as to provide support for students' sustainable competitiveness.

4.3 DEEPEN THE PROFESSIONAL GROUP CURRICULUM SYSTEM OF "POST PROGRESSION, THREE LEVELS AND THREE LEVELS"

In line with the principle of progressive posts, basic courses are mainly offered in the first academic year, such as silicon Lake branding Courses "Introduction to artificial intelligence", "Introduction to entrepreneurship", "entrepreneurship evolution and practice", "management Decoding" and other courses, so as to form a common morality and practice of students with artificial intelligence and entrepreneurial ability as the core elements and paramilitary education and ideological and political

education as the auxiliary, so that students can have the moral quality required for entrepreneurship Behavior habits and teamwork consciousness lay the basic quality for subsequent professional courses. Professional basic courses such as market research, Fundamentals of e-commerce, online shop art, online shop opening and copywriting have been jointly developed by schools and enterprises. At present, they have completed self-made handouts, integrated many experimental training links, and strengthened students' hands-on operation ability. At present, they are gradually improving, Select 2 textbooks for the preparation and publication of production education integration textbooks. The second and third academic years are mainly all kinds of professional courses and practical courses. The courses related to the latest professional development trends and the latest talent needs are offered as professional promotion courses, and can be offered as public elective courses of other majors to meet students' needs for new professional knowledge.

In combination with the reality of accurate training objectives, personalized training objects and diversified training ways, a post progressive, three-level and three-level curriculum system with effective connection of commissioner, supervisor, manager, basic quality, professional quality and professional quality is formed; Achieve the joint construction of schools and enterprises, and enterprises participate in the whole process, including the establishment of curriculum system and curriculum standards, formulate high-level professional curriculum standards, integrate the latest professional content and the latest technology into the curriculum, dynamically optimize the curriculum content, and complete the formulation of core curriculum standards. Create 1-2 school level online courses to provide students, teachers, enterprises and other social learners with open and shared learning resources. Students can preview in advance to promote online and offline hybrid teaching methods.

4.4 BUILDING A "FULL-TIME AND PART-TIME" TEACHING TEAM

Cooperate with jd.com and other enterprises to implement the two-way communication measures of professional teachers going to enterprises and enterprise experts entering the classroom. Through the two-way communication between schools and enterprises, cultivate a mixed teaching team with reasonable structure, full-time and part-time combination. Employ experienced enterprise executives, e-commerce and other front-line experts as part-time teachers to give full play to their practical skills and solve students' questions; Full time teachers regularly go to enterprises to learn new professional knowledge and skills, solve practical problems, send full-time teachers in batches every year to participate in teacher training of national and provincial training, carry out professional further study, and participate in professional seminars on e-commerce to expand teachers' horizons; Docking 1+x

Pilot the certificate system of cross-border e-commerce operation, guide the teaching reform of the curriculum module, incorporate the corresponding teaching content of the certificate pilot into the compulsory module of teacher training, and improve teachers' professional quality; Hire high-level masters or professors to guide our school, set up a studio, drive young teachers to improve their professional level, and strive to win the teaching ability competition in the national vocational college skills competition. Encourage teachers to participate in social practice and voluntary activities, publicize teachers' typical deeds of teachers' ethics, establish correct values, earnestly perform the duties of academic tutors, care for and care for students, and guide students to establish correct values and outlook on life.

4.5 BUILD A PRACTICAL TEACHING PLATFORM OF "COMBINATION OF VIRTUAL REALITY AND PROGRESSIVE ABILITY"

Relying on the e-commerce laboratory in the school, provide students with online simulation exercises, so that students can understand the operating rules of the simulation platform, the methods of opening stores and operating skills. In order to better attract the visual attention of consumers, increase the practical links of store art editing training, marketing copywriting and short video editing; Actively encourage students to participate in practical exercises of various skill competitions, and cultivate students' sense of teamwork, competition and innovation; Encourage students to obtain 1+x related certificates, consolidate their majors and make up for the lack of knowledge in time. Make use of jd.com and other cooperative enterprises to arrange students to participate in professional cognition practice and post practice from the third to the sixth semesters, further strengthen professional cognition and professional ability, understand dynamic professional needs, combine virtual and real, linkage and progression, give play to geographical advantages, serve the local economy, drive regional talent employment, improve comprehensive quality, and promote the deep integration of industry and education.

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The Way of Media Constructing the Real World under the New Media Ecosystem Based on the "Cloud" Scene

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Abstract: with the continuous development of media technology, people's lives are becoming more and more convenient, mobile, intelligent and open. From various "cloud" scenes that "exploded" during the COVID-19 at the beginning of this year, to a real-time and immersive living experience constructed by the media for people, the media is imperceptibly changing and "creating" people's lives. Media is no longer just a means of information dissemination, but through the continuous expansion of its communication function to build a new media reality.

Key words: Media; Media communication; Media reality; Cloud scene

INTRODUCTION

The COVID-19 outbreak in early 2020 has brought the public back to television once again, And in the face of this particular battle, People happen to experience and feel a "cloud presence" experience of Renren online, From the construction of 60 million "cloud supervisors" in Huoshenshan and Leishenshan hospitals, To the "cloud recording" of the major variety shows, The "Cloud recruitment" of each employer, "Cloud education" in various schools, Leaders to "cloud diplomacy" For a time, all kinds of "cloud" scenes have become common forms of people at home work, life, study, entertainment, in other words, The new form of media provides a media reality space for everyone in different places, in which everyone participates and everyone is equal. In recent years, with the wide application of new media technologies such as 5G technology, AI technology and VR technology, the reality built by media is more and more close, and the boundary is more and more blurred. As McLuhan said, "Like a fish that is not aware of the existence of water, the medium constitutes our environment and maintains its existence."[1]Its vivid metaphor explains the impact of the media on people and society: the media is quietly "creating" our environment, and thus changing our cognition of the objective real world, human social role, and interpersonal combination. In a sense, the media in people's real life constructed a special field, it became a "shortcut" to understand the objective real world, people live in such a real world, as swimming in the fish, in constantly absorb growth needed "nourishment" at the same time increasingly inseparable from the environment-media reality.

In the space constructed by the media, as a daily life ceremony, it reasonably "enters" everyone's family, and "walks" freely in people's public space and private space, and people live in a panoramic surveillance environment constructed by the media.The arrival of the 5G era, the trend of media fusion, the increase of media function and increasingly integration, the main body consciousness, media "give" its "more expression and spread" right ", make it from the initial passive acceptance of information" yes "to active information"reader ", to now the"disseminator ","the producer ","producer " and other multiple roles. To some extent, media constructs people's lives, changes the way people receive information, and affects people's perception of the outside world. As Merowitz said, "New media not only affect how people behave, but they ultimately affect how people think they should behave."[2]

1. AS A DAILY "CEREMONY" INTO PEOPLE'S LIFE

Semantically speaking, the ritual is "a series of formal activities with repeatable patterns that express common values, meaning, and beliefs".[3] For example, a week from the beginning to the end, a year through the spring, summer, autumn, winter four seasons cycle, a country will have a regular general elections, these are a kind of ritual performance. And the use of the media has the characteristics of certain repetitive, stereotyped and other rituals. As the ritual of the public daily life, it is having an impact on it in a subtle and silent way.Over time, he becomes an indispensable part of his life.

First, the behavior of medium communication tends to be a ritualization. In terms of the communication behavior of media organizations (including newspapers, radio stations, television stations and

other media organizations), it has been a customary and ritualized tendency. The production, publication and broadcast of media products in a certain field are basically carried out regularly in a fixed place and in a certain period of time, such as news has morning news, noon news, evening news, and newspapers have morning and evening newspapers, weekly newspapers, quarterly magazines, etc. Personally, relatively speaking, time is not fixed, but it has long become a daily habit of the audience."Whatever is wrong, brush short videos" has become a new daily "ritual" activity for people. According to the latest data released by the China Internet Information Center: "By June 2019, the number of online video users in China had reached 759 million, of which the number of short video users had reached 648 million, accounting for 75.8% of the total Internet users." In addition, according to the survey, " 42.7 percent of them will use short videos as their preferred form of entertainment when they end a day of work, study or life."With the popularity of smart phones and the full coverage of mobile networks and the implementation of policies of speed up and fee reduction, Provides people with a ubiquitous Internet access, The state of interconnection everywhere, "Short video", as the "new favorite" in the past two years, On the one hand, to meet people's leisure is "nothing" life entertainment needs; on the other hand, Short videos have been expanded from personal promotion to online product promotion, concept display and public welfare promotion conducted by enterprises, public institutions, various activities and organizations, Not only to expand its commercial value, It also boosts the new media industry, Such as short video shooting, editing, packaging, Research and development of various App used for short video production, Short video production, marketing course training and a series of online and offline video service industries are constantly emerging, This offers people more job opportunities and commercial uses, Become people's "something" need.

Secondly, the ritualization of the audience reception behavior. In daily life, the audience has a dependence on the media due to the frequent use of certain media. For example, in China, every year on New Year's Eve, the whole family sits together to watch the Spring Festival Gala, watch the News Network at 7 o'clock every night, and regularly listen to the radio, watch network dramas, or brush short videos and watch live broadcasts. Although the audience is not necessarily interested in the content presented, they will still unconsciously turn on the TV or mobile phone and log on to the network to browse the information, that is, this behavior of using the media has become a daily habit. As the Nudenstren's media survey report on Finland shows: " For Finns, focusing on news is just a ritual, a way to divide the pace of daily life and a manifestation of alienation. Many people are exposed to news because they see news as a way to connect with the outside world or a fixed way of life — However the content of news is irrelevant to them."[4] That is, the audience has developed a "non-targeted spiritual dependence"[5]That is, the audience has taken contacting the media as a daily habit and daily behavior ritual, rather than paying attention to the content of the media information itself.

2. IT RECONSTRUCTS PEOPLE'S SOCIAL WAYS

In our daily life, it is inevitable that we need to timely communicate with others at work and study. As Habermas said, " People are people of society after all, and it is impossible to have communication behavior, but must live in the system of communication behavior."[6] In the early human communication activities, the communication mode is relatively single, and it can only be communicated by limited media, such as human beings's own body movements and simple oral communication. The invention of words greatly expands people's communication space, and can spread long-distance information in the form of letters. The emergence of the telegraph and the invention of the telephone have expanded the scope of people's communication in the two dimensions of space and time, and improved the speed of information transmission. The emergence of the network is to construct a virtual space to connect people from around the world, forming a huge communication network, and shortening the distance between people to the distance between people and the screen. We say that the traditional communication mode is often formed based on the blood relationship, geography or industry relationship, and the virtual communication mode of the network greatly expands people's communication space, not only limited to the acquaintances, between friends, and even between strangers can have free communication and interaction. When watching network video, for example, people can participate in the topic of discussion and communication, at the same time will all in different audience, programs and program guests through the form of barrage, form a temporary social interaction, the audience in watching programs and participate in the interaction gained a strong sense of belonging and group identity. For another example, the reward mechanism of the major live broadcasting platforms is to establish a social relationship between anchors and fans through the gift of gifts with different price prices.However, media communication has not only had a certain impact on the communication mode of individuals, but also in recent years, the communication mode between the state and individuals and with the society has also changed, both abroad and at home. As the only four-time president to be elected in American history, Roosevelt's electoral success was largely based on speeches from the radio media, while Kennedy created a good positive image through the television media and defeating his opponent to win

the election.In 2008, Obama fully realized the powerful power of media communication and opened his own personal microblog to communicate with more ordinary people in real time, creating a good image of "people", successfully winning the election and winning re-election in 2012.Domestically, due to the COVID-19 epidemic in early 2020, "Chinese national leaders and foreign leaders started the" 'cloud diplomacy' with telephone, letter and video as the main channels ". At the same time, this year's "two sessions" also used the network video connection, VR glasses shooting, live broadcast and other ways to orderly open the "cloud" two sessions. Whether from the microblog politics in 2010, or this year's "cloud", it fully shows that the progress of media technology is changing the communication mode between the country and the country, the country and individuals, and individuals and individuals, and makes everyone "addicted" to it with a real-time, immersive and real experience.

3. BUILD A NEW "CLOUD" LIFE SCENE

In rural Chinese films in the 1980s, slogans often read "To get rich, build roads first". It can be said that for people, the road is not only a spatial channel leading to the outside world, but also an information channel to obtain external information and promote economic and cultural exchanges and development. Just as the English word "transportation", namely "communication", also says "communication, communication and communication", it can be said that the initial generation of roads has a certain relationship with the dissemination of information. As an extension medium of the human body, the transmission of long-distance information has been realized. At the same time, this media has re-divided the geographical space that we live in. From the perspective of the development of the city alone, although the city wall has become the starting point for our cognition of the city, and it has become the "initial mark of the city and the countryside"[7]But the main organ of the city is not the walls, but the crisscrossed roads to and from the points. In ancient times, roads were the communication between cities and cities, and also became a manifestation of "space politics". As the so-called "all roads lead to Rome" means that the city became the center of the empire, while the roads expanded around the city center in a radiating shape to highlight this central authority. As someone said: " The sense of the center and edge of the spatial pattern is the scale standard of the power order in the political field."In modern cities, however, the road has become an important place of capital operation, and business is realized in the process of the capital circulation, and drive the development of the city, and a single center is difficult to meet the requirements of the development of modern city, and formed multiple centers, such as cultural center, economic center, etc., and these also for the development of the city continuously with fresh" blood ", can say, the road to the whole city into a" network ". The change of the road brings people more of a change of concept and cognition.The development of the road has brought the economy, but also formed a series of social service system, such as shops along the street, roadside public telephone booth, rest stations, large shopping malls, schools, hospitals, residential areas, playground, railway station, bus station, etc., these have formed the people living urban space, affecting people's lives. In a sense, the road connection is a "offline" media reality, and with the rapid development of media technology, the city is no longer only exists in people's offline life, more often, people's life needs to be completed in the "online", small to all kinds of sweep code payment everywhere, big to the concept of "wisdom city" promotion and practice, these bring people a new life experience. Such as on July 20,2020 news reports, Chongqing 120 command center launched the "video 120" can be remote guidance self-help, namely through the Internet audio and video real-time communication technology, rescue center in the ambulance at the same time, to the alarm personnel or rescued mobile phone link, a doctor with its video calls, real-time self-help guidance, in order to save and help the injured as soon as possible. In addition, it also opened a deaf mute alarm, namely video sign language assistance.

With the advent of the 5G era, the speed of information transmission is getting faster and faster, from things to things to people and people, the whole society constitutes a real-time, online and mobile Internet of everything. In recent years, with the development and wide application of artificial intelligence technology, people's lives are becoming more and more convenient, more healthy and intelligent. In foreign countries where language is blocked, people can translate through speech recognition in their mobile phones to facilitate communication and communication. VR technology is used in different industries such as traditional media, new media, film and other industries, bringing people a brand new immersive experience. Smart home, smart transportation and other "occupancy", so that people can feel the pleasure brought by technological progress anytime and anywhere. With just one mobile phone, people can carry out all the activities in the area covered by the network: online shopping, online learning, cloud work, network operation, online business handling, online examination and so on. It can be said that the real life has emerged in the new media scene of mobile network construction. Especially in the normalization of the global epidemic this year, people's offline life, work, study seems to be pressed "pause button", but people's online life did not stop, but normal development, online courses in primary and secondary schools, universities continue online, teachers on the platform has become new network

"live"; master, doctor, enterprises and institutions have launched "cloud test", "cloud recruitment"; ", store" cloud ", namely through" professional terminal store service organization in line design, store broadcast design and display props development ". Various offline physical stores use digital empowerment to create a new "cloud business circle". In short, the networked, mobile and intelligent emerging media provides people with a real-time new life scene where everyone is "present". This life scene is to seamlessly connect the "offline" and the "online", forming a complete media reality space.

4. BUILD A NEW MEDIA MONITORING SYSTEM

When it comes to "surveillance" systems, the first thing everyone thinks of the most is a police film or legal newsreels, where the police view the surveillance system during interviews. Of course, the "monitoring" mentioned here is not only limited to this, but more importantly, the media's supervision and control of our personal information.For example, the most common mobile phone payment business, online banking business, medical records, pass ticket purchase and other online registration business, all of the personal information media.Someone may say, we are just an ordinary member of the society, who will specially to focus on us, indeed, each individual is not important, but countless individuals together constitute the "voters", "consumer" or statistical groups, its concern is not individuals or groups, but personal information into the database, these data can be individual to "present", such as a shopaholic, sports fans, gamers, etc. It is accompanied by the "computerization of monitoring files" about personal information in some countries[8] The personal information originally separated from different countries is connected in a network system, although it is beneficial for some special fields, such as the police can obtain detailed information in time when arresting fugitive suspects, so as to spread the sky net and carry out actions.

In addition, with people's "pursuit" of new media forms such as live streaming and short videos, all its private space is gradually "open" to the public view, eating, shopping, beauty, fitness. basically all scenes in daily life can be found live and short videos. In other words, the media is transforming the trivial personal living space into "the production space of capital"[9]. In view of the low threshold and convenient use of live broadcasting platforms, it is possible for ordinary people to become new live web celebrities. Compared with the early web celebrity BBB 1, the current BBB 1 is to gain attention and attract fans through excessive self-exposure. For the general audience, Internet celebrities have little personal privacy, Everything in their lives is open, And the reason for this phenomenon and once spread in the Internet world is the impact of the media, Especially in the age of omnimedia, The generation of new propagation modes, Everyone is a producer of information, Everyone's sharing can be spread, When this way of sharing my personal life, work and learning can obtain "rich" economic benefits to gain people's recognition, People have become obsessed with this pattern of overexposure and shared life, And these just meet the psychological needs of ordinary people and seek the equal identity of everyone in the media space. Thus it can be seen that, in terms of the functions of the media itself, when it integrates into and constructs people's real world in a ritualized, intelligent and convenient way, it also guides people to consciously enter the media network controlled by it imperceptibly.

5. CONCLUSION

Whether this year is "pet" outbreak "cloud" cloud "," cloud recruitment "," cloud business circle "," cloud diplomacy "and a series of" cloud scene " activities, or people social way, life scene, is based on media technology change, media environment, media is not only ordinary tools or means for information dissemination, more important is its own transmission function, it will determine the change of society.

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Research on Energy Conservation and Green Environmental Protection Technology in Civil Engineering Construction

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Abstract: in recent years, China's social and economic development level continues to improve, but with the ecological environment problems are increasingly serious, as a huge resources of civil engineering, must realize the current construction defects and deficiencies, and comply with the economic environmental requirements, innovation construction, introduce and implement the green construction technology, the ecological concept throughout the whole civil engineering, to realize reduce unnecessary resource consumption, reduce the pollution of ecological environment. In the project, the staff should uphold the concept of environmental protection, actively learn the new green technology, improve the utilization rate of resources, contribute to China's ecological and environmental protection work, and make contributions to the sustainable and healthy development of the construction field. The application of energy saving technology will also be analyzed in civil engineering below, hoping to provide suggestions for the corresponding personnel.
Key words: civil engineering; green and energy-saving technology; analysis

INTRODUCTION

In recent years, China's ecological and environmental problems have become more and more severe, the natural environment deterioration, the lack of natural resources, these serious situations are not conducive to the smooth progress of China's sustainable development work. As a huge energy consumption of civil engineering, must bear the brunt of innovation and optimization, realize their own resources consumption, completes the relationship between civil engineering construction and ecological environmental protection coordination, avoid unnecessary waste of resources in the construction process of caused, realize the resource utilization and environmental protection results both progress. Based on this, this article will analyze the significance and value of green energy-saving technology, and put forward its application measures in civil engineering. I hope that under the discussion of this paper, the corresponding staff can provide suggestions and ideas.

1. APPLICATION VALUE OF ENERGY-SAVING AND GREEN AND ENVIRONMENTAL PROTECTION TECHNOLOGY

1.1 IT IS CONDUCIVE TO OPTIMIZING THE LIVING ENVIRONMENT

Modern social environment, the people pay close attention to the quality of life and social environment, to improve the standard of quality of life continuously, so in the process of civil engineering construction, should also be the goal of the people as the principle of construction work, civil engineering construction can achieve the dual goal of ecological and health, meet the requirements of the masses, optimize the living environment of the masses. According to the actual use standard of technology, if the introduction of green technology in civil engineering construction, not only can only effectively optimize the application of building materials, but also improve the effectiveness of engineering construction, effectively realize resource conservation and ecological environment protection, and achieve the goal of improving the quality of life and building energy efficiency of the masses.

1.2 BENEFICIAL TO PROMOTING THE DEVELOPMENT OF ENGINEERING CONSTRUCTION

The scientific application of technical means can achieve the goal of promoting the development of civil engineering. With the promotion of green environmental protection and advanced technology, civil engineering will continue to move towards the trend of environmental protection, and the energy consumption in the overall construction process of civil engineering will also be effectively controlled. Because the overall construction operation of civil engineering requires more energy, the scientific control of energy consumption can provide a driving force for the project construction, ensure the overall effect of China's engineering construction, and bring positive and beneficial effects on the development of the society.

1.3 IT IS CONDUCIVE TO ACHIEVING SUSTAINABLE DEVELOPMENT

The construction of civil engineering needs to put and consume a lot of energy resources. Most of these resources are not renewable capacity resources. If the cost is huge, it will inevitably lead to the energy shortage and severe resource situation in China. However, under the promotion of green technology,

civil engineering construction can effectively alleviate the large cost of resources, and the engineering construction mode will also be optimized and innovated, laying a foundation for the sustainable development of the construction field and the sustainable development of the society, and realizing more benefits for civil engineering[1].

2. STATUS QUO OF GREEN CONSTRUCTION OF CIVIL ENGINEERING

2.1 THE IDEA OF GREEN AND ENVIRONMENTAL PROTECTION IS WEAK

Under the background of the rapid development and progress of social economy, the number and scale of civil engineering continues to expand, in the process of various types of civil engineering construction, the construction unit if can fully use and implement the green environmental protection ideas, so inevitably can stand out in the fierce competition, get the development and optimization. In fact, a large part of the construction unit in the process of civil engineering construction, the environmental protection and ecological consciousness is weak, makes the lack of work for the actual engineering scientific control, green concept is not deep into engineering every link and process, it will hinder and limit the engineering construction smoothly. Because they do not have the concept of ecological and environmental protection, all departments and staff of the construction unit have not actively and independently put into the green operation, and still use the previous backward extensive management mode, which will inevitably make the construction unit incompatible in the sustainable development society, thus being eliminated by the market[2].

2.2 CONSTRUCTION QUALITY IS NOT UP TO STANDARD

Part of the construction unit in the long process of development, although also realized the key role of ecological environmental protection, also has the basic energy conservation ideas, but in the actual civil engineering, the application of energy-saving materials still have more significant quality problems, more even, in the process of green technology, not according to the corresponding specification requirements to engineering operations, make civil engineering under the background of the application of green technology quality defects. Although in the current process of rapid progress in the construction field, green technology is more and more diversified, each technology still has its particularity and has not completely formed a consistent quality index, which makes the quality problems emerge in the process of technology use, which seriously affects the quality of the project.

3. APPLICATION OF ENERGY-SAVING TECHNOLOGY IN CIVIL ENGINEERING

3.1 APPLICATION OF ENVIRONMENTAL PROTECTION TECHNOLOGY IN DOORS, WINDOWS AND WALL CONSTRUCTION

As an important medium connecting the whole building structure connecting the external environment and the internal environment of the building, doors and Windows are the part that must be paid attention to in the process of engineering construction process. First of all, the staff in the process of installing doors and Windows, should make good use of sealant, and according to the actual situation, the application of broken bridge aluminum structure component engineering work, the author compares the fixed, pull and open type of window, found that fixed window has the best energy saving effect, and other types of window compared to energy saving effect is not significant. Secondly, according to the actual construction situation of civil engineering, the staff in the process of designing doors and Windows, should be on the basis of ensuring excellent lighting and ventilation ability, reasonable design of window-wall ratio orientation, which is also beneficial to meet the goal of energy conservation. Finally, according to the actual situation, the relevant green technology into it, can also achieve significant results. Such as broken hot aluminum material, polyurethane foam are common and easy to use materials, in addition, the glass color, coating treatment, or the use of hollow structure, multi-level glass window, also can play a significant role in energy saving. The staff should control the coordination degree between doors and Windows and external walls, and choose to use excellent alloy materials to expand the production of doors and Windows, so as to improve the closure degree of the overall structure of the building[3].

3.2 WALL THERMAL INSULATION TECHNOLOGY

Wall, as the key composition of the whole building structure, is also an important link in the application of green technology. The wall engineering quantity is large, and the green technology is mainly used in the improvement of heat insulation level in the wall construction operation. In the current period, the construction personnel will mostly choose in the wall in the process of the work, in the interior of the wall or wall surface design corresponding insulation materials, to promote the wall with insulation ability and heat isolation ability, on the heat conduction way of building internal heat loss effectively control and reduce, to reduce unnecessary resource consumption, realize the scientific control of temperature. At present, wall thermal insulation technology has obtained a large-scale application in the field of civil engineering. Its main application methods are divided into internal thermal insulation technology, external thermal insulation technology and internal hybrid technology because of the different points of thermal and external material planning. In the current period of the use of all new wall materials, it is very widely used with autoclaved aerated concrete, because this material has significant advantages, such as excellent

thermal insulation ability, light material texture. In general, in the construction process of civil engineering construction, the goal of energy saving can be achieved by using autoclaved aerated concrete, which can also scientifically solve the industrial waste residue, rationally allocate resources, and effectively realize the field of civil engineering toward the trend of environmental protection. But it is important to note that the staff in the application of autoclaved aerated concrete, first of all, because the material has large pores, which makes the material capacity is poor, but also insufficient than concrete general weight, so the autoclaved concrete has a low thermal conductivity, in the application process should pay attention to its proper storage. Secondly, in the production process of this material, it consumes less resources than the clay bricks. Because of the low density of autoclaved concrete, it can save a lot of land resources and effectively avoid the situation of resources consumption, so it is widely used in engineering.

3.3 SOLAR ENERGY TECHNOLOGY

Among the natural resources, solar energy has the advantages of green, pollution-free, renewable and repeated utilization. In today's era when resource depletion and environmental problems have become more and more prominent, solar energy has been widely used in various fields. In the civil engineering construction, solar energy has long been introduced and applied, and has obtained the corresponding results, the use of solar water heater, is one of the most common ways. In the current period, the construction of the roof, facade curtain wall and other parts of the construction process, the application of new photovoltaic materials, the material can effectively collect solar energy, and through a certain way to collect good solar energy into electricity, provide stable power for the building, on the premise of meet the building foundation function, to achieve the goal of green pollution-free[4].

Texas micro row building, for example, it is the world's largest solar buildings, sun altar micro row building a total construction area of 75000 square meters, in the world to realize the solar hot water supply, heating, refrigeration, photovoltaic grid technology and building, building overall energy saving efficiency of 88%, can save 2640 tons of standard coal, 6.6 million degrees, reduce emissions 8672.4 tons, is the world initiative to realize the solar water heating, heating, refrigeration, photovoltaic grid technology and building[5]. As shown in Figure 1.

Figure 1 Texas Micro row Building

3.4 HOUSE ROOF INSULATION TECHNOLOGY

Housing is in the process of civil engineering construction, a key part of the green technology application, first of all, considering the building roof will usually bear the influence of solar radiation, solar light, rain erosion factors, so the staff can try to green design on roof structure, round, pointed scheme design on the roof parts, in this way to scientifically adjust the temperature in the building. Secondly, in the selection process of materials, the staff can also adjust and optimize the actual situation, can take the new green materials with low thermal conductivity as the first choice, apply them in civil engineering, to achieve the goal of warm in winter and cool in summer; again, for other parts of energy saving and environmental protection technology can also be appropriately introduced and applied, such as insulation and moisture-proof composite materials between the roof insulation layer and moisture-proof layer, which not only effectively meet the aesthetic requirements, but also effectively promote the overall building comfort and green ecological requirements and standards. Finally, the foam glass roof insulation system with strong safety and excellent environmental protection performance can also be a very popular environmental protection technology in recent years, and the staff can effectively use it according to the actual situation of the project, so as to achieve the goal of green environmental protection.

3.5 PROMOTE NEW TECHNOLOGIES AND ENERGY APPLICATIONS

Bare earthwork treatment. Staff in the process of civil engineering construction, will inevitably cause a lot of bare earthwork, if civil engineering is in the densely populated area, then will be very likely due to a lot of dust, the dust will not only make the ecological environment pollution, but also will cause interference to the actual life of the people around, so must do a good job of bare earthwork. Workers can use all new materials to spread the earthwork to minimize pollution.

Construction scheme optimization. First of all, the staff should organize the introduction and application of the new green materials, and immediately analyze and study the very possible pollution situation in the civil engineering, so as to ensure the scientific and efficient engineering scheme design, and do a good job in environmental pollution control. Secondly, the staff should do a good job in the construction technology inspection, the first time to adjust and optimize the technology with strong pollution nature, and make technical disclosure, to ensure that each work process and links can be efficiently completed with the boost of green technology. For example, the staff can add a certain amount of fly ash in the process of concrete production, through this way to achieve the goal of improving the concrete thermal

insulation capacity, to achieve excellent environmental protection results, to ensure the social benefits and environmental benefits of civil engineering[6].

3.6 IMPROVE THE MATERIAL UTILIZATION RATE

The author investigated a large number of civil engineering actual construction situation analysis learned that in the engineering construction environment, will produce a lot of waste materials, and the waste materials can still have the value of reuse, its application in civil engineering other operation link, can effectively ensure the high quality of building materials reuse, to realize the goal of saving resources. In order to ensure the scientific application of green technology in engineering projects, construction enterprises should effectively dispose of the waste materials of the project, and form unified disposal of waste materials. In, for example, the actual construction process of a civil engineering, the staff use crusher, will waste gravel and brick crushing processing, after it as sand raw materials, through repeated processing of waste construction building materials, can significantly reduce the cost of resources, effectively save the cost of civil engineering construction. In order to ensure the practical implementation and efficient utilization of green technology in civil engineering, it is necessary to build enterprises to clarify the requirements and standards of green environmental protection development according to the development requirements and steps of The Times, and use all kinds of waste with high quality. In addition, the construction unit should also introduce and apply new energy saving facilities, so as to improve the staff's awareness of environmental protection ideas, so that the construction personnel can fully realize the key significance of scientific application of energy saving technology, to ensure that the cost of resources is implemented.

For example, Hangzhou Low-carbon Science and Technology Museum is designed and constructed according to the "national green building three-star" standard, which is a veritable low-carbon building. With a total construction area of 33,700 square meters, local building materials will be selected first to reduce carbon emissions during material transportation; natural and recyclable materials will be selected; and curtain walls will use solar photovoltaic materials as much as possible. The museum, which is expected to be completed in 2011, and will be the world's first low-carbon-themed science and technology museum. As shown in Figure 2.

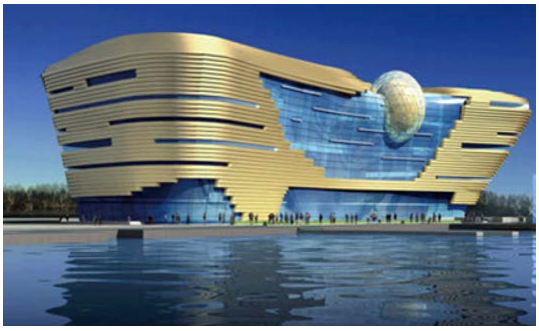

Figure 2: Hangzhou Low Carbon Science and Technology Museum

4. MEASURES TO IMPROVE THE QUALITY OF GREEN TECHNOLOGY APPLICATION

4.1 INCREASE THE INTENSITY OF PUBLICITY OF ENVIRONMENTAL PROTECTION CONCEPT

In order to alleviate the weak situation of green ecological environmental protection staff, In the actual process of civil engineering construction, Managers should actively carry out environmental protection publicity work, The First up, then, Staff should be regularly organized to join in a variety of environmental protection and green training activities, With the help of the training activities, To help the staff to truly realize the important role of environmental protection, And the key significance of applying green technology in the construction process, Through the detailed division and implementation of environmental protection responsibilities, Improve the functional thought of the staff, To ensure that the staff can independently and actively put into the process of environmental protection work, And a deep and comprehensive study of a variety of environmental protection technologies, To improve the high-quality application of green technology. Second, we should combine the characteristics of civil engineering and the construction content of the project to help the staff to clarify the key process and links to be managed in the process of the project, to ensure that the staff can independently conduct the use of various energy-saving technology, so as to achieve excellent environmental protection results.

4.2 RAW MATERIAL MANAGEMENT WELL

The control of raw materials is the basis for the effective application of green technology. In the process of actual management, managers should first control the limit of raw materials, and purchase raw materials according to civil engineering standards, engineering content and other factors. Secondly, when launching the material to receive, we should also record and record the actual situation of the material in each field carefully and comprehensively, at the same time, we should not meet the requirements of the material for the first time, to avoid the situation of random collection or waste of materials at will, to ensure the utilization rate of raw materials. Finally, we should do a good job in the recovery of material recycling system and recycling system construction, reasonable reuse and recycling

of materials work, to ensure that every building materials can be used in all aspects. In civil engineering demolition and installation projects, personnel with strong professional ability should be assigned to carry out various engineering operations, so as to ensure the added value of materials and ensure the maximum play of their added value.

4.3 CREATE A COMPLETE ENERGY-SAVING MANAGEMENT AND CONTROL SYSTEM

In order to ensure that civil engineering overall construction results, it should be in the project construction process, create a comprehensive control system, clear division of work functions and power, through creating and establish related rewards and punishment mechanism, to achieve the whole scientific implementation of energy saving technology, ensure the smooth application of energy conservation technology in civil engineering. In addition, should also strengthen the supervision and management of civil engineering green technology application status of strength, the engineering construction of resource consumption, etc., and ecological environment pollution serious punishment, management department should also do a good job of energy conservation, environmental protection thought to implement in every detail and every person in the heart, improve the quality of green technology application.

5. CONCLUSION

To sum up, civil engineering must recognize the severity of the environmental problems at the present stage, and focus on their own actual situation, to develop green ecological engineering. The author studies and investigates the actual situation of civil engineering at the present stage, and finds that although some projects have introduced and applied the corresponding green technologies, there are still unreasonable and unscientific cognitive aspects, which all affect the construction of civil engineering. Civil engineering must, on the basis of ecological and environmental protection, change the construction ideas, rationally apply the green technology, improve the environmental protection efficiency, deepen the ecological significance, and lay the foundation for the smooth progress of the project.

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Teaching Reform of Mechatronics Technology Major in Higher Vocational Colleges under the Vision of Information Technology

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Abstract: For higher vocational students majoring in mechatronics technology, the professional courses of mechatronics technology require students to fully master the relevant skills.And in order to be able to effectively improve the electromechanical teaching quality of higher vocational schools in China, this paper mainly analyzes the information technology horizon, the importance of the electromechanical integration of higher vocational technology professional teaching reform, and to explore the current teaching situation, finally put forward some effective reform countermeasures, aims to provide some reference for relevant teachers.
Key words: information technology; higher vocational education; mechatronics technology; teaching reform

INTRODUCTION

As a key subject in higher vocational schools in China, it can enable students to have good professional skills in electromechanical technology, so as to provide students for students to leave the campus and enter the society and create a good foundation. However, from the current teaching situation of higher vocational schools in China, some teachers are seriously bound by the previous concept of exam-oriented teaching, and still use lagging teaching means to carry out knowledge teaching, which makes it difficult to effectively improve the teaching efficiency. Therefore, teachers should carry out teaching reform reasonably under the perspective of information technology, combine with students 'actual learning situation, optimize and improve their own teaching methods and contents, so that students' mechanical and electrical professional skills can be significantly improved.

1. THE IMPORTANCE OF TEACHING REFORM OF ELECTROMECHANICAL INTEGRATION TECHNOLOGY IN HIGHER VOCATIONAL COLLEGES UNDER THE PERSPECTIVE OF INFORMATIZATION

For higher vocational electromechanical integration technology, is the previous mechanical manufacturing and automation professional as the basic premise, the evolution of a professional discipline, it can put many different mechanical knowledge comprehensive summary and perfect, make it more conform to the needs of higher vocational students learning today, make higher vocational students after learning of knowledge content, can fully meet the demand of the social market for talents[1]. therefore, In today's information city area, The course teacher needs to combine the content of the teaching material and the students' actual learning situation, To carry out the teaching reform of mechatronics technology major, Its great importance, It is mainly manifested in the following two aspects: First, Due to the previous boring and lagging teaching form, Unable to fully meet the actual development needs of higher vocational students, Therefore, teachers need to teach their own teaching forms and classroom teaching content, Develop a scientific and reasonable improvement and optimization; second, Because the previous classroom teaching form is relatively boring, If teachers blindly use traditional teaching methods, To explain the knowledge to the students, Then it will cause the professional and technical personnel cultivated, cannot fully meet the specific needs of the social market. The main goal of higher vocational schools in China is to cultivate more professional and excellent talents, so that they can quickly adapt to and meet the requirements of the social market after leaving the campus and entering the society in the future. In view of this, it is necessary for higher vocational schools and relevant teachers to take the professional teaching reform as the key content, so as to create favorable conditions for the healthy development of students in the future.

2. ANALYSIS OF THE TEACHING STATUS OF MECHATRONICS TECHNOLOGY MAJOR IN HIGHER VOCATIONAL COLLEGES

2.1 THE CONSTRUCTION OF THE PRACTICAL TRAINING BASE IS INSUFFICIENT

Because of the constraints of economic conditions, the current most of our country higher vocational school internal training curriculum is not sufficient, complete, teaching equipment is relatively old, compared with the current industry leading equipment, equipment is relatively backward, especially in line with the characteristics of professional teaching experiment equipment is scarce, so the students' PLC training integration is not fully implemented[2]. But in terms of electromechanical integration technology course education, the role of

training teaching is very key, and the equipment is an important guarantee of training teaching efficient and orderly development, can make the students in the first time between theoretical knowledge and practical practice, for higher vocational students to create a good training teaching environment, but if the relevant of the equipment configuration is not perfect, will to the smooth development of teaching practice and the teaching results, bring negative effects.

2.2 TEACHERS HAVE WEAK TEACHING ABILITY AND COMPREHENSIVE QUALITY

As the guide of electromechanical integrated classroom teaching in higher vocational schools, teachers are of key significance to students' knowledge learning. A teacher with strong comprehensive quality and sufficient professional knowledge reserve will significantly improve the quality of classroom teaching when explaining knowledge to students. However, if the teacher's own knowledge system is not perfect and the teaching facilities are relatively old, the classroom teaching effect will be greatly reduced. In higher vocational schools in our country in the past, most teachers lack of basic knowledge, and comprehensive literacy and the relevant provisions of the country, in this case cultivated by the students are generally basic theoretical knowledge is not strong, practical practice operation is not enough, the lack of good innovation ability, this will be the students employment in the future, bring very serious negative impact.In addition, higher vocational echatronics teachers are too young and lack of sufficient classroom teaching experience, which is also very unfavorable to the reform of mechatronics technology courses.

3. THE TEACHING REFORM COUNTERMEASURES OF HIGHER VOCATIONAL MECHATRONICS TECHNOLOGY MAJOR UNDER THE PERSPECTIVE OF INFORMATION TECHNOLOGY

3.1 STRENGTHEN THE LEARNING SITUATION ANALYSIS

At present, in the information technology environment, in order to make our higher vocational school electromechanical integration technology professional teaching reform work smoothly, teachers should class students actual learning analysis, this is because in the process of classroom teaching work, students occupy the main body of knowledge learning, students can according to their own specific situation and learning characteristics, to independent knowledge learning, thus, if in order to ensure the higher vocational colleges professional teaching reform to meet the actual development of students, we should do the analysis of class students. However, through the current situation of teaching management in higher vocational colleges, Since most students' academic performance is not ideal, And the academic ability and the basic ability are also relatively low, In addition, some school teachers have long been the verbal blame and cold treatment, The students have already had a lack of strong interest in mastering the knowledge, In order to maximize prevent the emergence of this phenomenon, Need to teach teachers in the usual education and teaching work, Conduct in-depth analysis and exploration of students' life situation, learning characteristics and learning situation, In order to develop targeted education and teaching for students, In this way can improve students' interest in knowledge learning[3]. In addition, in today's rapid development of information technology environment, many types of teaching equipment used in higher vocational electromechanical integration professional teaching, at this time, need teachers and the student characteristics, the combination of different teaching facilities and teaching forms of scientific use, clear class students interested in what things, in order to students' interest in learning as the breakthrough point of professional teaching reform, so as to achieve the ideal classroom teaching effect. For example: teachers found in the classroom teaching through the use of multimedia technology can achieve good teaching effect, so in the process of professional knowledge in the future, teachers can put most of the classroom teaching time and energy in multimedia teaching, for students to design a scientific, reasonable and interesting teaching content and way, to achieve the fundamental goal of improving students' professional skills.

3.2 CLEAR TEACHING OBJECTIVES

Higher vocational schools in the process of electromechanical integration technology professional teaching reform, need to clear education teaching objectives as the key, investigate its root, mainly because in the electromechanical integration classroom teaching stage, only teachers themselves have a clear classroom teaching objectives, to maximize to prevent classroom teaching from the theme phenomenon. In clear classroom teaching objectives, need teachers can to teaching content and teaching material content deep analysis and research, and to the class students of the future development job comprehensive analysis, combine the job and classroom teaching content, in order to ensure that students learn in school knowledge content, can obtain comprehensive application in the future work[4]. In addition, teachers should also combine with professional characteristics and market development characteristics to set scientific and reasonable classroom teaching objectives, which plays a very important role in improving students' professional skills.

3.3 PAY ATTENTION TO THE RATIONAL APPLICATION OF INFORMATION TECHNOLOGY

To some extent, the innovation of teaching methods directly affects students' interest in knowledge

learning and determines the quality of classroom teaching. Therefore, teachers should break the constraints of traditional teaching forms and pay attention to the use of information technology to carry out classroom teaching. Because information technology has animation, sound, text, image and other performance, it can build vivid and vivid classroom teaching situations for students, fully mobilize students' interest in knowledge learning, and through the image and interesting video demonstration, it can significantly improve the overall quality and efficiency of electromechanical integration teaching in higher vocational schools. For example: teachers in the daily teaching process, if just use language to explain theoretical knowledge to students, it is difficult to let students to have a full understanding and grasp of relevant knowledge, then if the teacher can make theoretical knowledge into dynamic courseware, not only can make students actively, independent to participate in the classroom learning, but also can let the students have a full knowledge of the knowledge. Again, for example, the teaching teacher in the actual teaching, can abandon the past in the blackboard drawing of teaching means, but using video, PPT, and many other ways, the teaching knowledge clear, intuitive to students, make students in the auditory and visual, active, independent to participate in the classroom learning, deepen the memory of the theoretical knowledge. At this stage, Teachers should clearly master the students' knowledge and learning objectives, Will own pay attention to theoretical knowledge explanation of classroom teaching forms, To focus on cultivating students' professional skills, And to reposition the classroom education and teaching, The fundamental teaching goal is to train more compound excellent talents for the society, Pay attention to the actual needs of the current society and students' future work needs into the classroom teaching, Comprehensive cultivation of students' professional skills, theoretical knowledge and personal attitude, And it is deeply reflected in the teaching content, Targeted classroom teaching for students, Improve students' skills overall, For students to leave the campus at a later date, When entering the society to work, Apply the theoretical knowledge learned to practical practice reasonably, Quickly adapt to your own job position, Thus, for the long-term development of the enterprise, Contribution their own meager strength.

3.4 ESTABLISH A SCIENTIFIC AND COMPREHENSIVE PRACTICAL TRAINING AND TEACHING MODE

First of all, in the process of students' future work, mechatronics puts very strict requirements on the student team cooperation. In specific work links, mechatronics projects usually require one or more teams to complete. In this case, in the teacher in the daily teaching process, the class students can be divided into several learning groups, requiring students to complete the classroom learning tasks.Among them, the teaching teacher should be combined with the specific situation of the students in the class to divide the students into groups, so that the students and the students can cooperate with each other, and complete the relevant tasks in tacit understanding and efficiency.At the same time, in the process of group cooperation, teachers should also add some real projects of social enterprises, so that students can have certain work experience when learning in school, and find their own technical shortcomings and advantages through practical projects.Through a large number of investigation and analysis, it can be found that through the application of group cooperation teaching method, it can significantly enhance the sense of team cooperation of higher vocational students, let the students have a consistent learning goal, form a good learning environment of mutual cooperation, mutual promotion and mutual supervision in the group, and further improve the students' knowledge learning efficiency[5]. in addition, In the process of teaching reform by teachers, stratified teaching methods can also be used to explain knowledge to students, This is because students have different life experience and growth backgrounds, It leads to obvious individual differences between students and students, Therefore, the efficiency with which students can absorb internalization when learning knowledge is different, The existence of such conditions, In a class of students with excellent academic performance, There are also students with poor academic performance, Therefore, teachers should fully understand and master the actual learning situation of each class in daily teaching, According to the personal characteristics of the students, To develop a targeted classroom teaching, And the reasonable use of stratified teaching method to make so that all students in the class can make some progress, So as to promote the healthy development of students, Build a good foundation.

3.5 IMPROVE THE COMPREHENSIVE QUALITY OF THE TEACHERS

In the process of carrying out the teaching reform of mechatronics technology major, if higher vocational schools want to achieve the most ideal results, the necessary conditions are a faculty team with strong comprehensive quality. In the integration of teaching reform stage, the role of teachers were given more connotation and challenges, the teacher as the student knowledge learning promoters, organizers and instructors, in the actual classroom teaching process, is no longer by the teacher to students explain basic theoretical knowledge, but promote and guide students to rediscover knowledge and comprehensively solve the problem. Therefore, in the current mechatronics classroom teaching in higher vocational colleges, teachers should carry out

independent inquiry and independent learning on the course content, so as to become the brilliant instructor, effective organizer and powerful promoter of the relevant knowledge learning of the class students[6]. among, As a mentor, Need teachers should not only have sufficient professional theoretical knowledge and strong professional skills, At the same time, it is also necessary to accurately guide students to develop knowledge learning; As an organizer, Teachers are required that in the actual teaching process, Maintain good classroom teaching discipline, Can be used for the orderly implementation of classroom teaching, create favorable conditions; As a facilitator, Not only need teachers to have good professional skills and sufficient professional knowledge, It should also have a professional affection, This mainly refers to the beliefs and ideals related to the value and the essence of education formed in the long period of work, Education and teaching work can be carried out efficiently and orderly.It can be seen that, under the perspective of today's information technology, teachers need the teaching reform of mechanical and electrical integration technology majors in higher vocational schools to actively change and improve their lagging education and teaching concepts, and continue to innovate, so as to create a good foundation for students in the future.

CONCLUSION

In a word, the previous teaching of mechatronics technology in higher vocational colleges has long been unable to fully meet the actual needs of students, and optimizing the teaching strategy of higher vocational colleges has become an important work content. Therefore, in order to further improve students' comprehensive quality and professional skills, relevant teachers need to actively improve and reform the teaching of mechatronics technology in the process of daily engineering development. At this stage, teachers should carry out under the perspective of information technology, so as to create a good foundation for students' future development in the future.

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The Influence of Language Aptitude and Written Feedback on College Students' English Writing

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Abstract: English, as an important foreign language, has always been highly valued by China's education industry. The focus of language learning is on the skilled application of "listening, speaking, reading and writing". The effective teaching of English writing is a difficult problem that teachers must overcome.Under the trend of educational innovation of the new curriculum reform, the contemporary college English teaching activities put forward higher requirements for the teachers.In the process of English teaching, teachers should pay attention to the language aptitude and written feedback, adjust the teaching methods reasonably, ensure the universality and pertinence of the teaching means, and effectively improve the students' English writing ability.The paper analyzes the influence of language aptitude and written feedback on English writing from a cognitive and socio-cultural perspective.
Key words: language aptitude; written feedback; English writing

INTRODUCTION

As we all know, writing is an important part of English teaching. The effect of English writing is directly related to the participation of teachers and students. Teachers can provide written feedback based on students'language aptitude to promote the development of students' writing ability.Written feedback is an important means of bilingual writing teaching. Teachers need to pay attention to it and give timely feedback to improve students' English writing level.To improve the effectiveness of students'English writing learning, teachers need to strengthen their in-depth understanding of students, clarify the difficulties that students encounter in writing, and apply their own rich teaching experience and knowledge reserve to effectively answer students' questions.Teachers should play their own guiding role and cultivate students' comprehensive ability of English learning.

1. INFLUENCE OF LANGUAGE APTITUDE ON ENGLISH WRITING

1.1 OVERVIEW OF LANGUAGE APTITUDE

As we all know, writing is an important part of English teaching.Students' English writing ability has a direct relationship to language aptitude. In short, language aptitude refers to the tendency of learning ability and the potential of the educated to acquire new knowledge.This concept has a long history, and teaching students according to their aptitude reflects the differences of learning ability.Linguistic ability refers to the potential of learning languages other than the native language, which is related to the English writing ability of college students, and is related to their learning achievements. Therefore, teachers need to pay attention to the cultivation of language aptitude. Many years ago, scholars have studied the language aptitude and conducted a language aptitude test. The earliest learning test appeared at the beginning of the last century, in the test, can reflect the learning gap of different learners, the main reason for the gap is the educational conditions and language aptitude. At present, this test has been popular, widely used in talent selection and other aspects.In general, the learning test is similar to the intelligence test, but the learning test focuses on the content related to school tasks, and the intelligence test focuses on the content of intelligence factors.This time, the learning test is related to the common achievement test, which focuses on review and the learning test focuses on prediction. The stage tests seen by college students are the achievement test, including the final exam, CET- 4 test and other diversified level tests. Through this kind of test, students' language aptitude and language literacy can be understood. Teachers can understand the real situation of students through tests, analyze it combined with the learning situation, apply targeted teaching methods, and gradually improve their writing ability.

1.2 LANGUAGE APTITUDE AND TEACHING STRATEGIES

In the teaching process, teachers can classify students combined with the results of language aptitude test, formulate corresponding teaching strategies, and improve the English writing level of college students.MLAT is a commonly used linguistic ability test topic, but also an influential topic. It can be used in this way to test, and fully grasp the foundation of students' writing. In the test of language coding, but combining the actual situation of college students, its voice has formed a habit, can improve space is

limited, so can omit language coding part, can focus on students' grammar sensitivity, language induction ability to test, gradually improve its writing ability.After the learning test, teachers can compare the results of different tests, and through this way can analyze whether students' learning meets the expected standards.Combined with the actual situation, if the student's test performance is higher than his academic test score, then it means that the student's academic performance reaches the expected standard, improves his writing level, and gives a stable play, that is to say, the teaching plan applied at the present stage is feasible and does not need to be adjusted.However, if it is found that the academic test performance is low, that is, the students' learning achievement does not meet the expected standards, and it does not give full play to their real ability, it also shows that the teaching plan applied at the present stage is not reasonable, and should be adjusted under such circumstances. It should be noted that the above conclusions are related to the level of the students' language aptitude. If the students are good enough, they can be taught according to the above conclusions. However, if students' English writing level is weak and in the lower middle level, teachers need to make reasonable adjustment. First of all, when the teaching program needs to be adjusted, this situation generally occurs when the students'academic ability test results are good. If the students' academic performance decreases and does not meet the expected standards, the teachers need to adjust their teaching strategies in time. The root cause of this situation may be that students have not been exposed to systematic knowledge teaching in the past, or it may be caused by the imbalance of sub-item teaching. For this kind of situation, teachers can make reasonable use of the first semester after admission, reasonable arrangement of teaching content, understand the students'English knowledge is weak, targeted explanation, can be optimized on the basis of grading teaching, can through the way to guide students, can be senders teaching, which have a problem to focus on where, finally achieve the purpose of improving students' writing level. Secondly, under the condition that the teaching plan needs to be changed, when students' test results appear "poor", the teaching plan can be changed and can be taught in accordance with their aptitude. For students with weak basic ability, teachers can explain the basic content and carry out stratified teaching, so as to ensure that teacher resources can effectively play their own role. Finally, in the teaching scheme may be between keep and change, there are mainly two main situations, one is the student test results for medium level, the second is poor academic performance but for such medium, teachers can still use previous teaching scheme, different, different environment, teachers under different conditions need to specific analysis, if you want to improve the level of students' writing, the best to optimize the teaching scheme[1].

2. IMPACT OF WRITTEN FEEDBACK ON ENGLISH WRITING

2.1 OVERVIEW OF WRITTEN FEEDBACK

In short, written feedback refers to teacher feedback on errors in a students' written text. Combined with the written feedback of teachers, the educated can find their mistakes, find the cause of the mistakes, and then find the appropriate method to correct errors.As early as 1996, scholars conducted a series of debates on the effectiveness of written feedback, from which many related books appeared.It has been argued that written feedback can not reduce the language measures of the educated, and does not benefit the improvement of their language literacy, so this teaching method can be abandoned. However, some people believe that written feedback is very effective and can meet the learning needs of the educated and meet their subjective requirements.At present, the theory of language acquisition is growing, and researchers in this field are very enthusiastic about error analysis. The written feedback has received attention from all walks of life and has become a hot topic in the field of language acquisition.More and more researchers are responding to the effectiveness of written feedback. Some scholars have verified the positive effect of written feedback, and they have applied the method of "pre-test-intervention-post-test".After the study, the educated subjects who received the written feedback were found to perform well during the posttest phase.Moreover, the study reflected the long-term nature of the written feedback, with the educated who received it performing well on several subsequent tests and outperformed the others.Chinese researchers have also analyzed and studied the written feedback, and found that it has a great impact on the writing level of college students.At the time of the experiment, the educated were grouped, which could be divided into direct and indirect feedback groups, as well as control groups. In the experiment, the relevant personnel wrote a number of papers, the teacher needs to modify them, and ensure the modification effect. After the end of the experiment, it can be found that the effect of written feedback is directly related to the writing effect, to ensure the effectiveness of written feedback, can improve the writing level of the educated, and can guide the educated to accurately apply the second language.Compared with indirect feedback, the effect of direct feedback is more intuitive. In addition, it can be found that the specific feedback effect is better than the general feedback effect, which can effectively improve the quality and efficiency of students' writing [2].

2.2 THEORETICAL FRAMEWORK OF WRITTEN FEEDBACK

As far as written feedback research is concerned, it is

generally analyzed and guided by cognitive theory and socio-cultural theory.From a cognitive perspective, written feedback puts more emphasis on feedback on the feelings of recipients. Focusing on the processing and processing of the second language, the second language knowledge can be divided into two categories: one is explicit knowledge; the other is implicit knowledge. Only with the coordinated development of the two can the language aptitude of the educated be improved and their language literacy be improved.In this regard, Anderson proposed the ACT model, which has many advantages and can classify knowledge, including not only declarative knowledge, but also procedural knowledge.In short, declarative knowledge is objective, generally including the objective environment and background, as well as some situational knowledge. Procedural knowledge is very different. This kind of knowledge is individual and involves individual cognition, including cognitive skills and other aspects.Through a certain amount of practice, you can memorize it by heart.The ACT model believes that two-language learning has a transformation process, which can gradually transform declarative knowledge into procedural knowledge. In this process, more attention is paid to the transformation of content representation and the process of processing the second language.In addition, scholar McLaughlin, based on psychological knowledge, applied scientific concepts to explain the second language learning process, and put forward the information processing model.He believes that learners' information processing ability is limited and learning tasks have certain complexity. Therefore, it is difficult to process information. Only when learners improve themselves, amplify certain aspects of skills and realize automation can the quality and efficiency of information processing be further improved and expand the limit of information processing. For two-language acquisition, continuous practice is information processing, which can gradually transform the previous cognitive control processing into automatic language processing, which can internalize knowledge and improve their language skills. At present, there are two main types of input information: positive examples and negative examples. In short, acceptable and normative examples belong to positive examples, while unnormative language forms and deconstruction belong to negative examples [3]. The information processing process can be divided into the following contents: The first stage is to pay attention to attract students' attention to the information, guide them to allocate their attention reasonably, and ensure the rationality of learning. The second stage is understanding, pay attention to knowledge after further understanding of knowledge, the second language level is closely related to the degree of students' understanding. The third stage is to absorb and internalize the knowledge based on understanding. There is relevant English knowledge in the students' minds, including the knowledge of the native language. When applying knowledge to write, students can extract knowledge, reasonably match the knowledge of the second language and the knowledge of the own language, and realize the absorption of knowledge. The fourth stage is integration, at which knowledge can be integrated, further absorbing written feedback and gradually transformed into tacit knowledge. The fifth stage is the output, in which the students can output the language to realize the feedback of the learning effect. From the perspective of social culture, the second language is regarded as an intermediary tool, learners can adjust social activities through the application tools, and the application of language can ensure the social development effect and promote the development of people's cognitive function. This idea is different from the two-language acquisition idea. Social-cultural theory regards learning as a process of knowledge internalization, focusing on if knowledge is applied to social activities. This concept attaches importance to mother language and believes that mother language is a mediation tool and is endowed with traditional culture, which can play a key role in the process of learning the second language and ensure the effect of the second language teaching activities. In addition, this theory attaches more importance to interaction, and can regard the second language learning process as the interaction of learners of different levels. When they communicate, teachers can give written feedback, which can play the effectiveness of written feedback and act as a scaffold for learners to ensure the learning effect of learners. For higher-level learners, corrective feedback can be implemented to help lower-level learners in this way. In this mode, low-level learners can self-improve themselves and gradually surpass their recent development areas, and then improve their language ability and writing skills. At the same time, high-level people can consolidate knowledge and can internalize knowledge. Through this communicative activity, we can ensure that the subject literacy of learners can be improved[4].

2.3 WRITTEN FEEDBACK ON TEACHING STRATEGIES

As we all know, written feedback is not an effective teaching strategy, but also an important link of writing teaching, which belongs to the bridge of communication between teachers and students. Effective written feedback can improve students' English literacy, ensure the quality of their language output, and improve their phonetic learning effect. Therefore, teachers need to pay attention to this, and can give written feedback to improve the quality and efficiency of feedback. The following will put forward reasonable suggestions: First, students can apply appropriate feedback strategies and choose the corresponding feedback type.For students with low

English literacy, direct feedback can be provided, and indirectly for students with high English literacy.The main reason is that students with good English level generally have strong initiative. After receiving indirect feedback from teachers, they can think independently and modify it by themselves.However, students with poor foundation are difficult to guarantee the effectiveness of the modification.Therefore, the students' language aptitude needs to give feedback.Second, the content and the form can be integrated.Combined with the actual English teaching, teachers often pay more attention to the application accuracy of writing language, easy to ignore the view of writing, and do not pay attention to whether the writing content is rich. For students, nothing is easy to write in the process of second language writing.Therefore, teachers need to control the article, can focus on the structure and framework of students 'writing, but also can focus on the writing content and writing ideas, which helps to improve the organization of students' writing.Third, combine positive comments and wrong modifications.Some teachers may pay attention to composition correction, and generally put forward suggestions for students' articles. This way may ignore the highlights of students' writing. In this case, students can not get positive feedback, reduce their confidence and desire to write.Therefore, teachers can give students the enthusiasm of the comments when correcting the memory mistakes, which can improve the students' writing desires[5].

CONCLUSION

In a word, language aptitude and written feedback are important parts of teaching. They are hot issues in the field of English education. In the teaching process, teachers can combine students' language aptitude to provide written feedback, which helps to improve students' enthusiasm.When giving written feedback, teachers can give feedback combined with their teaching objectives, focus on the application of language, and improve students' writing ability.

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Exploration of OBE-based Software Testing Scrum Practice Teaching Model

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Abstract: Aiming at the problems of large number of theoretical knowledge points and difficulties in cultivating students' independent and practical abilities in the current software testing courses in colleges and universities, the Scrum management process teaching model, which introduces the OBE teaching concept into the practical teaching of software testing, is proposed. The general idea and implementation process of this teaching model are elaborated. The good results achieved in teaching prove the effectiveness of the model.
Keywords: OBE; Scrum; Software Testing

1. INTRODUCTION

Software testing is an emerging job along with the development of IT industry, and there is a great demand for software testing talents in the talent market both at present and in the future [1]. Software testing is a mandatory course for computer software majors. Currently, most of the software testing courses offered by computer-related majors in universities mainly cover the basic concepts of software testing, the design techniques of black-box and white-box test cases and the use of test automation tools [2]. Without the support of experiments and practical training, the traditional indoctrination teaching method of boringly explaining testing theories and testing methods will make students resist and become averse to learning. Since the learning process of the course is short, and the learning content is stuck in books, most of the students learn only the written content after the course, and master only the basic theoretical knowledge of software testing, extremely lack of practical experience, and cannot successfully complete the actual work of a software project testing [3].

Some problems in the teaching of software testing courses lead to a large gap between the teaching effect and the desired goal. It is necessary to introduce advanced teaching management concepts and teaching models to guide and further strengthen the cultivation of students' independent ability and practical ability to meet the needs of market development [4]. Outcomes-Based Education (OBE) focuses on the learning effectiveness of students and the ability to truly possess knowledge and apply it in practice, and the teaching content may be fragmented, but the improvement of students' ability is holistic, and knowledge transfer is based on the improvement of students' practical ability [5].

Agile development is a software development method that responds to rapidly changing needs, and its core management ideas have many similarities with OBE [6]. Therefore, we consider incorporating agile Scrum management into teaching and learning, and using the educational concept of OBE as the core of our Scrum practice teaching model to form an iterative development model for continuous construction and improvement of practical projects. The model is oriented to the completion of practical project testing tasks and is centered on the internal drive of student initiative. It can train students to learn to cope with changes in hardware and software environment in practice, and help improve their comprehensive abilities of learning planning and organizing, engineering implementation, teamwork, documentation, analysis and problem solving.

2. SCRUM AGILE METHODOLOGY

Agile development, also known as "light software engineering," is a human-centered software development philosophy that emphasizes communication among developers, sustainable delivery of work, and rapid and flexible response to software requirements and development problems. One of the fastest growing of the many agile development methods is the Scrum agile development process, which was formalized by Ken Schwaber and Jeff Sutherland in 1993 and has been used by companies such as Yahoo, Microsoft, Google, Motorola, Cisco, and others [7]. Many teams using Scrum report that Scrum greatly improves team productivity and morale and is an effective method for controlling team engineering.

Scrum is an iterative, incremental framework that takes a cyclical approach to product development, and Scrum refers to these cyclical efforts as Sprints, around which the entire Scrum framework revolves [8]. At the beginning of the Sprint, the project team selects items from a prioritized list of requirements and completes them by the end of the Sprint; during the Sprint, the deliverables do not change, and each workday, team members briefly report on each other's progress and update the burn-down chart based on the remaining work. At the end of the Sprint, the project team demonstrates what they have done and provides

feedback on what needs to be incorporated into the next Sprint [9].

The main roles in a Scrum team are: Scrum Master (who ensures that the team is running Scrum properly and helps the team remove obstacles to implementation), Product Owner (who defines the direction and vision of the product, defines the content, priorities and delivery time of the product release) and the development team (which includes all the required professionals from art, operations, testing, etc.).

The Scrum process includes:

(1) Start Scrum, where the product owner lists all product requirements, prioritizes them all, forms a product backlog, and starts Sprint iterations.

(2) Sprint iterations. Each Sprint is preceded by a Sprint planning meeting. First, the product owner and the development team review the product backlog and exchange ideas about the backlog with each other. Second, the development team selects the requirements from the product backlog for this Sprint, usually in order of priority. Finally, the development team estimates the amount of time each member needs to spend on the task in this sprint. Once the time is determined, the development team breaks down the highest priority requirements into individual tasks and records them in the Sprint backlog document. Once the tasks are identified, team members voluntarily claim the tasks and need to consider the task order, estimate the time for each task and ensure that the workload of each member is balanced, and then complete the requirements in sequence.

3. OBE-BASED TEACHING MODEL FOR SOFTWARE TESTING SCRUM PRACTICES

3.1 General Idea

The OBE-based software testing Scrum practice teaching model takes the completion of testing tasks of real projects as user requirements. It takes the realization of user needs as the basic line, takes students as the core to determine the objectives of professional learning outcomes, and adopts the Scrum management model to guide the learning process. In class, teachers guide students to work together to set goals, receive tasks, discuss problems, and share experiences. Out of class, students independently assess and supplement their knowledge, decompose problems, and complete their goals and tasks. Students share and exchange information through GitHub and our university's cloud platform. Continuous feedback is used throughout the teaching period to monitor progress and evaluate in a timely manner, in order to effectively supervise and motivate students to complete all the competencies required by the software testing course.

3.2 Roles and Responsibilities

The Scrum methodology emphasizes collaborative work, and each role in the model must fully play his role to ensure that the final goal is achieved. The main function of the teacher is equivalent to the Product Owner and Global Scrum Master in Agile Scrum, who should propose the course objectives and decompose them into user requirements that can be tested. He is also responsible for explaining the Scrum methodology and task objectives, tracking and guiding the implementation process of the Scrum methodology. Students participating in the software testing course voluntarily group into teams of 3 to 6 people and elect a team leader. The team leader assumes the role of Scrum Master and is responsible for understanding and digesting user requirements, coordinating tasks, organizing discussions, tracking the process, reporting tasks and communicating issues. Team members evaluate tasks, select a list of tasks to be completed for each Sprint, complete the tasks, and present them.

3.3 Implementation Process of OBE-Based Scrum Practice Teaching Model

The core point of OBE-based Scrum practice teaching is to clarify the teaching objectives. The teaching objective of the course is to enable students to apply and master the learned software development principles and skills in the process of completing actual project tests through teacher guidance and management. The course lasts for 3 months, and every two teaching weeks is a Sprint, so the whole teaching process consists of about 6 Sprints. The teaching model has a general framework of an internal and external two-tier cycle, and its specific implementation process is shown in Figure 1. The outer cycle is led by the teacher's supervision and feedback mechanism and follows the OBE education concept. The inner loop is a student-oriented Sprint implementation process, using the idea of multiple iterations of Sprint. The students' software testing ability is repeated several times in practice, and the difficulty is increased from shallow to deep step by step, so that they can learn by doing and continuously improve their professional skills through repeated "doing".

(1) The teacher sets the course objectives and tasks and presents the requirements.

The tasks of a software testing course consist of three main components, namely learning the basic theory, practicing testing techniques, and improving competencies. These tasks can be further subdivided into several small, checkable target tasks. The basic theory objectives include the mastery of software testing methods, types, strategies, black-box testing, white-box testing, software testing process management, software testing metrics and other knowledge. The tasks of testing practice include test plan design and writing, test case design, test execution, defect tracking, regression testing, etc. Some of the testing activities require the use of automatic testing tools, such as the unit testing tool JUnit, functional testing tool Selenium, UFT (Unified

Functional Tester) and the performance testing tool LoadRunner. The tasks to improve competency include keeping students informed of hot research issues in the field of software testing, guiding them to actively explore the latest research areas, and keeping them abreast of the latest research results.

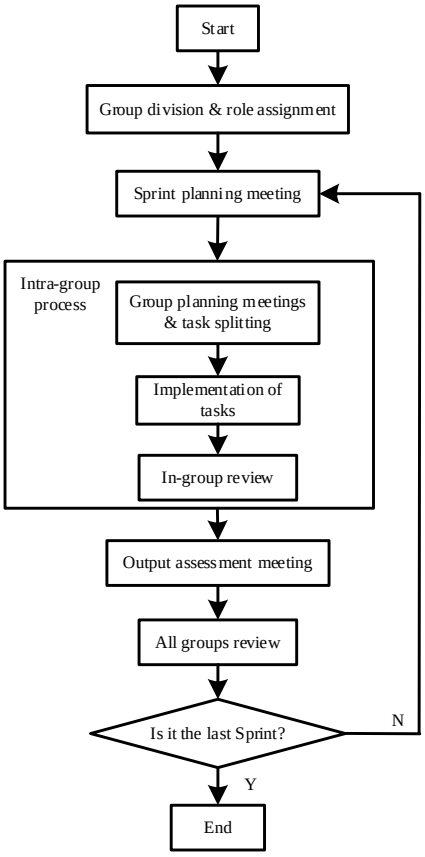

Figure 1 OBE-based software testing Scrum practice teaching model

(2) Sprint planning meeting and task assignment for each group.

Conduct Sprint planning meetings. The assignment of tasks to each project team is done in a self-selected manner, with teacher assistance, to minimize the dependency between the tasks of each group. After the meeting, the teacher describes the target tasks to be accomplished in this Sprint and upload them to the cloud platform as a backlog.

(3) Enter the internal Sprint implementation process for each group.

Once the task objectives are established, each group enters into their own internal Sprint implementation process which includes Sprint planning, task splitting, group member task claiming and realization, and review and summary activities. In order to better accomplish the task objectives, students need to supplement their knowledge on their own with the help of online videos on the cloud platform and access to materials.

(4) Assessment and delivery of output.

After the task is completed, the Scrum Master will present and explain the completed task to all the students and the teacher in class, and the teacher will evaluate whether the completed task meets the objective. After confirming that the objective is achieved, the group will summarize and record the strengths and weaknesses of the Sprint and continue to promote or improve it in the next Sprint.

(5) All review and summary.

This activity is conducted at the end of each Sprint. Through the teacher's guidance, the Scrum Master of each group shares the conclusions of the group review meeting, and all students participate in the discussion, communication and supplementation, absorbing and learning from the good methods and improving the shortcomings of each group's Sprint process, so as to achieve the purpose of mutual promotion and common improvement. In addition, the teacher analyzes and summarizes the learning results, and can deepen, transfer and improve the current knowledge points in relation to the actual situation. Finally, based on student feedback, the teacher returns to step 1 if a requirement change is needed, otherwise it goes to step 2, the next Sprint cycle, until all of the course objective tasks are completed.

4. CONCLUSIONS

The OBE-based software testing Scrum practice teaching model adopts the management model of Agile Scrum and borrows the concept of Sprint. It follows the OBE education ideology with a learning output education approach that focuses on engineering competencies and transforms the course teaching objectives into software testing project objectives. In this way, the learning process is transformed into a multi-stage iterative incremental project practice process. This teaching model meets the requirements of OBE teaching philosophy for student training, taking into account both skill training and theory learning. The small-step iterations build students' self-confidence in self-learning and task completion. At the same time, it also follows the dual principle of theory-practice of modern software engineering teaching and facilitates students to convert their knowledge into intrinsic software engineering comprehensive ability. Real project testing tasks are selected as practical projects. Students gain theoretical knowledge and practical project experience at the same time. The feedback from students proves that the model achieves good teaching results.

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A Study of Model Training Efficiency on Large-Scale Datasets

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Abstract：This paper reviews the research progress on model training efficiency on large-scale datasets, focusing on algorithm optimization, hardware acceleration techniques and parallel computing strategies. In terms of algorithm optimization, lightweight model design improves model operation efficiency by reducing the model complexity and the number of parameters; knowledge distillation technique allows small models to learn the knowledge of large models, which improves the performance; and migration learning accelerates the learning process of a new task by using the knowledge of pre-trained models. In terms of hardware acceleration techniques, the use of GPUs and TPUs provides powerful parallel computing capabilities for the training of deep learning models; heterogeneous computing platforms achieve optimal allocation and utilization of computing resources by combining the advantages of multiple processors. Parallel computing and distributed training strategies, including data parallelism, model parallelism, and hybrid parallelism, further improve the processing capability of large-scale datasets and the efficiency of model training. Automated Machine Learning (AutoML), as a future development direction, will drive the further development and application of these techniques. The review in this paper provides a comprehensive perspective for understanding and applying these techniques, as well as an outlook on future research directions.

Keywords: algorithm optimization; hardware acceleration; parallel computing and distributed training

1. INTRODUCTION.

With the explosive growth of data volume and significant increase in computational power, the field of machine learning has seen unprecedented development opportunities. In this context, model training on large-scale datasets has become the key to promote the progress of artificial intelligence. However, large-scale training also brings many challenges, including high consumption of computational resources, prolonged training time, and uncertainty in model generalization ability. To address these challenges, researchers have explored a variety of algorithm optimizations, hardware acceleration techniques, and parallel computing strategies aimed at improving the efficiency and performance of model training.

This paper reviews the current research progress on model training efficiency on large-scale datasets, including algorithm optimization techniques such as lightweight model design, knowledge distillation, and transfer learning; hardware acceleration techniques such as GPUs, TPUs, and heterogeneous computing platforms; as well as parallel computing and distributed training methods such as data-parallelism, model-parallelism, and hybrid-parallelism strategies. The comprehensive application of these technologies can not only significantly improve the training speed of the model, but also achieve better model performance under limited hardware resources.

2. KEY ISSUES IN MODEL TRAINING EFFICIENCY

2.1 Data Preprocessing and Enhancement

Data cleansing is the initial step in ensuring data quality, which includes removing duplicate records, correcting erroneous and inconsistent data, and identifying and processing missing values. Data cleaning is particularly important in large-scale datasets, where impure data may cause the model to learn the wrong patterns, thus affecting the model's accuracy and generalization ability. To make model training more efficient, the data needs to be normalized or normalized. This involves scaling the data to a small, specified range such as [0, 1] or [-1, 1], or transforming the data to have zero mean and unit variance. Normalization helps to speed up convergence and improve training efficiency, especially when using optimization algorithms such as gradient descent. Data augmentation is a technique that improves the generalization ability of a model, especially when the amount of data is limited. Increasing the diversity of the dataset by applying a series of random transformations (e.g., rotation, flipping, scaling, cropping, etc.) can help the model learn more robust features. In addition, data augmentation reduces the risk of overfitting and improves the model's performance on unseen data. Data coding is the process of converting non-numeric data (e.g., categorical data) into numeric data that the model can handle. Common coding methods include One-Hot Encoding, Label Encoding, and Embedding Encoding. Choosing the appropriate encoding method is crucial to maintain the semantic information of the data and improve the model performance.

2.2 Model Selection and Design

Model type selection is the first step in the model design process. Different problem types and data characteristics require the selection of different model architectures. For example, for image recognition tasks, Convolutional Neural Networks (CNNs) are preferred for their powerful feature extraction capabilities, while in the field of Natural Language Processing (NLP), Recurrent Neural Networks (RNNs) and Long Short-Term Memory Networks (LSTMs) are favored for their ability to deal with sequential data. For large-scale datasets, deep learning models are becoming increasingly popular for their ability to capture complex patterns. The design of model architectures needs to consider the depth and width of the model. Deeper and wider networks are usually able to learn more complex features, but also require more computational resources and time for training. Therefore, the design should weigh the model complexity and available resources. In addition, regularization techniques such as Dropout and Batch Normalization can be integrated into the model to improve the generalization ability and accelerate the training process. The choice of hyperparameters is crucial for model performance. Hyperparameters include learning rate, batch size, optimizer type, etc., which need to be tuned according to the specific task and dataset characteristics. Automated hyperparameter optimization techniques, such as grid search, stochastic search, and Bayesian optimization, can help find the best hyperparameter settings. Model optimization strategies are also an important part of model design. This includes the use of early stopping to avoid overfitting, and model integration techniques such as Bagging and Boosting to improve model stability and performance. In addition, automated model design techniques, such as Neural Architecture Search (NAS), can be used to automatically explore optimal model architectures. Scalability of the model is another important factor to consider during design. On large-scale datasets, the model should be able to handle the growing amount of data and be able to be trained on multiple machines in a distributed manner. This requires the model to be designed with parallelization and distributed computing in mind. Finally, the interpretability and maintainability of the model are also factors to be considered during design. As models become more complex, it becomes increasingly important to keep them interpretable and maintainable, which is crucial for debugging and improving them.

2.3 Training Strategy and Optimization

Training strategy and optimization are crucial when training models on large-scale datasets. Choosing

the right optimization algorithm is crucial for improving training efficiency and model performance. Gradient descent and its variants, such as SGD, Adam and RMSprop, are commonly used optimization algorithms. These algorithms accelerate convergence and prevent falling into local minima by adjusting the learning rate and introducing momentum. The learning rate tuning strategy is a key component of the optimization process. Techniques such as learning rate decay, warm-up and periodic tuning can help the model converge more stably. In addition, regularization techniques such as L1 and L2 regularization and Dropout prevent overfitting and enhance the generalization ability of the model by limiting the model complexity. To prevent overfitting, Early Stopping is an effective strategy that stops training when the performance no longer improves by monitoring the performance on the validation set. Meanwhile, model integration techniques, such as Bagging, Boosting, and Stacking, improve overall performance and stability by combining predictions from multiple models. In terms of hyperparameter selection, hyperparameter optimization is the process of finding the optimal model configuration. The best combination of hyperparameters can be found automatically through methods such as grid search, stochastic search, or Bayesian optimization. As the size of models and datasets grows, parallel computing and distributed training become more and more important. Data-parallel, model-parallel, and hybrid-parallel techniques allow models to be trained simultaneously on multiple processors, significantly improving training efficiency. Finally, model distillation is a model compression technique that improves inference speed while maintaining performance by training a small student model to mimic a large teacher model. By combining the above training strategies and optimization techniques, the training efficiency and performance of models can be effectively improved on large-scale datasets.

2.4 Hardware Resource Utilization

GPUs (Graphics Processing Units) have become the standard hardware in deep learning training because they provide parallel processing capabilities that can significantly accelerate matrix operations, which are at the core of most machine learning algorithms. Especially for deep neural networks, GPUs can drastically reduce training time. As the model scales, single-GPU training may no longer be feasible. This is where multi-GPU training and distributed training systems become especially important. By distributing data and models across multiple GPUs or compute nodes, more efficient parallel processing can be achieved, thus reducing training time.TPU (Tensor Processing Unit) is another type of hardware designed specifically for machine learning and developed by Google.TPUs can provide higher performance than GPUs in some cases, especially in large-scale TensorFlow model training. In addition to compute resources, memory and storage are also hardware resources to consider. When dealing with large-scale datasets, sufficient memory can avoid frequent data exchanges and improve training speed. Meanwhile, a fast storage system can speed up data reading and reduce I/O bottlenecks. Hardware gas pedals such as FPGAs (Field Programmable Gate Arrays) and ASICs (Application Specific Integrated Circuits) are also used for specific machine learning tasks to provide customized hardware acceleration.

3. MODEL TRAINING EFFICIENCY IMPROVEMENT STRATEGIES

3.1 Algorithm Optimization

Lightweight model design is an important direction in algorithm optimization. With the rise of mobile devices and edge computing, the demand for models that can run in resource-constrained environments is increasing. Lightweight models make models more concise and efficient by reducing the complexity and number of parameters of the model, while maintaining a reasonable level of performance. These models are not only faster to train, but also consume less memory and computational resources during inference, making them ideal for deployment in mobile devices and embedded systems. Knowledge distillation is a

model compression technique that allows a small "student" model to learn the behavior of a large "teacher" model. In this way, the student model can capture the knowledge of the teacher model, thus achieving performance close to that of the teacher model while maintaining a small model size. Knowledge distillation is particularly useful for improving the performance of lightweight models, as it allows these models to learn advanced feature representations from more complex models. Migration learning is another powerful algorithmic optimization strategy that allows models to leverage knowledge learned on one task to solve another related task. In migration learning, it is common to pre-train a model from a large dataset and then apply this pre-trained model to a new, possibly smaller data-volume task. This approach can significantly reduce the training time on the new task and improve the performance of the model on the new task, especially when the amount of data on the new task is not sufficient to train a large model.

The combined application of these algorithmic optimization techniques can reduce the training and inference time of a model and reduce the demand on computational resources while maintaining or improving model performance. Lightweight model design, knowledge distillation, and transfer learning are all effective means to achieve this goal, and they are driving the expansion of machine learning models to a wider range of application scenarios, including resource-constrained environments and domains with less data. Through these strategies, machine learning models become more efficient, flexible, and practical.

3.2 Hardware Acceleration Technologies

The use of GPUs and TPUs are the two main directions of current hardware acceleration.GPUs (Graphics Processing Units) were originally designed for graphics rendering, but their parallel processing capabilities make them well suited to perform the large-scale matrix operations found in deep learning algorithms. Modern GPUs, such as NVIDIA's family, have been widely used to accelerate the training and inference process of machine learning models.

TPUs (Tensor Processing Units) are Google's custom hardware designed specifically for machine learning workloads.TPUs are optimized for the TensorFlow framework and provide efficient tensor computing power, which allows TPUs to excel when performing deep learning tasks, especially when using Google's machine learning services.

Heterogeneous computing platforms combine different types of processors such as CPUs, GPUs, TPUs, and other possible gas pedals such as FPGAs (Field Programmable Gate Arrays) and ASICs (Application Specific Integrated Circuits). This heterogeneous approach allows the system to optimize performance for different types of tasks, such as using CPUs for task scheduling and control, GPUs for massively parallel computation, TPUs to handle specific machine learning operations, and FPGAs and ASICs for custom optimization for specific algorithms.

The advantage of a heterogeneous computing platform is its flexibility and scalability. It allows developers to choose the right hardware gas pedal for a specific task to achieve optimal performance and efficiency. In addition, heterogeneous computing improves resource utilization and reduces energy consumption, which is especially important for large-scale data centers.

3.3 Parallel Computing and Distributed Training Data Parallelism

Data parallelism is a common parallelization strategy that splits a large-scale dataset into multiple small batches, which are then trained simultaneously on multiple processors (e.g., CPUs, GPUs, or TPUs). Each processor computes gradients independently and synchronizes these gradients during training. The main advantage of data parallelism is that it can easily scale to large amounts of data and is relatively simple to implement for most deep learning frameworks. Model parallelism is another parallelization method that distributes different parts of the model to different processors. This approach is particularly suitable for models that are too large to be fully

loaded on a single processor. In model parallelism, each processor is responsible for a portion of the model, and coordination between processors is required to ensure that gradient updates are correctly synchronized across the model. The hybrid parallel strategy combines the benefits of data parallelism and model parallelism, allowing parallel processing of data and models on multiple processors at the same time. This strategy is suitable for scenarios where large amounts of data and large models need to be processed simultaneously. Hybrid parallelism provides the most flexibility and scalability, but it is also the most complex to implement, as it requires careful design of data and model partitioning and communication between processors.

3.4 Automated Machine Learning (AutoML)

The core goal of AutoML is to automate multiple steps in the machine learning workflow, including data preprocessing, feature selection, model selection, hyperparameter optimization, and model deployment. By automating these steps, AutoML reduces the reliance on specialized knowledge and enables non-expert users to train high-performance models. Neural Architecture Search (NAS) is an important branch of AutoML that focuses on automating the process of designing neural network architectures.NAS searches a large number of network architectures to find the optimal or near-optimal architecture, which typically involves using reinforcement learning, evolutionary algorithms, or other optimization techniques to evaluate and select the architecture. Hyperparameter optimization is another key component of AutoML. Hyperparameters, such as learning rate, batch size, number of network layers, and number of neurons in a layer, can have a significant impact on model performance.AutoML, by automating hyperparameter optimization, finds the optimal combination of hyperparameters to improve model performance and training efficiency.

4.CONCLUSION

Automated Machine Learning (AutoML), as an important direction for model training in the future, will further promote the development of algorithm optimization, hardware acceleration, and parallel computing technology.AutoML greatly simplifies the machine learning workflow by automating the steps of feature engineering, model selection, and hyperparameter optimization, and is expected to achieve more efficient and smarter model training.

Looking ahead, with the continuous advancement of hardware technology and the continuous innovation of algorithmic optimization strategies, model training on large-scale datasets will become more efficient and scalable. We expect these technologies to further reduce the threshold of machine learning applications, enabling more people to utilize machine learning technologies to solve practical problems and promote the widespread application and in-depth development of AI technologies. At the same time, we should also note that with the increase in model complexity and data volume, how to balance model performance, training efficiency and interpretability will be an issue to focus on in future research.

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