

Artificial Intelligence and Special Rraining of Higher Education Talents in Response to Public Health Emergencies from the Perspective of Psychology

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Abstract: The development of artificial intelligence technology brings new opportunities for social governance, especially in the emergency treatment of public health emergencies; the application scenarios of artificial intelligence are more and more abundant. Based on the study of public health emergencies from the perspective of psychology, this paper systematically studies the cultivation of talents in higher education and the application of artificial intelligence by using qualitative and quantitative research methods such as literature analysis and questionnaire survey. In this paper, we use Chinese and foreign academic journal network, China master and doctoral dissertation database, VIP and other network resource databases to search for literature and materials related to the quality of higher education and the application of artificial intelligence, and summarize and sort out the relevant data, so as to find out the shortcomings of existing research. The results show that "innovation ability" is only 3.29, "practice and skills" accounts for 38%. Colleges and universities should strengthen the cultivation of students' innovative ability and medical workers' practice and skills, so as to better respond to public health emergencies. The experimental results of drug solubility prediction show that the prediction efficiency of neural network is better than that of linear regression model. Big data driven artificial intelligence knowledge discovery algorithm is becoming an effective tool to improve drug development efficiency and reduce research and development costs.

Keywords: Higher Education Personnel Training, Artificial Intelligence, Public Health Emergencies, Psychological Perspective, Artificial Neural Network

1. Introduction

Colleges and universities are specialized institutions for training outstanding talents for the society, and the cultivation of talents is related to the development and growth of the country. Therefore, the state must attach great importance to higher education. Talent training is a long-term plan. Theoretically speaking, the talent training of higher education is in line with the Marxist theory of all-round development of human beings. The ultimate goal of education is to cultivate people's all-round and free development. From the perspective of social development, the cultivation of talents in higher education is related to the long-term stability of the country. The competition between countries is the competition of talents. Only when talents occupy a dominant position can they occupy a favorable position in the international competition.

Higher education is relatively far away from social production and social life, and its task is to cultivate academic elites and ruling talents for the society [1-2]. Engwall discusses the characteristics of higher education and four modes of Internationalization: introduction of ideas, outsourcing, outsourcing and FDI. According to the research results of engwall, the most important mode of internationalization of higher education is to introduce ideas to domestic colleges and universities. Striving for reputation in the domestic market is an important motivation behind the other three internationalization modes. These three modes have their own unique disadvantages, which need university leaders to deal with [3-4]. Yeap studies the factors that promote college students to adopt mobile learning. Attitude, subjective norm and perceived behavior control have significant effects on students' mobile learning intention. The results of Yeap's study show that these three structures are significantly predetermined by their respective external belief components. In the process of training students to accept mobile learning, we should pay more attention to the use of subjective norms to improve the ability of perceptual behavior control [5-6]. Sim research investigated the different configurations of participation dimensions of service providers and brands. The results of SIM research

show that it is necessary to examine the constellation of participation dimensions related to multiple focus objects to understand their interdependence and the potential impact of higher-level aggregation on participation in complex service environment [7-8]. Ratkovic studies production systems in which decision-making units are described by their inputs and outputs over several consecutive cycles. Ratkovic puts forward a multi period DEA model, which only aims at the "best" period of the evaluated unit. Ratkovic's research overcomes the shortcomings of multi period DEA model, and establishes a new model to evaluate the efficiency of decision-making units in the whole production chain [9-10]. Ghanizadeh's research explored the influence of higher-order thinking ability and self-monitoring on academic performance of college students [11-12]. McNally's study surveyed 563 undergraduate and graduate students who participated in the flipped teaching environment and 10 conveners who participated in the flipped course [13-14].

Artificial intelligence is a discipline that studies how computers simulate certain human thinking processes and intelligent behaviors [15-16]. Caviglione uses two detection methods based on artificial intelligence tools, such as neural network and decision tree, to find malicious software that covertly exchanges data [17-18]. Yang used stochastic forest method, artificial neural network and support vector regression method to predict the inflow of reservoirs in the United States and China one month in advance [19-20]. In szelag's study, the sedimentation of activated sludge was predicted using the measured results of inflow, temperature of sewage pool, external circulation degree and internal circulation degree of cedzyna bio mechanical wastewater treatment plant near kirche, Poland [21-22]. Labovitz study evaluated the application of artificial intelligence platform on mobile platform in measuring and improving anticoagulant treatment compliance of stroke patients. Although the introduction of direct oral anticoagulants reduces the need for monitoring, it also brings pressure on patients to self-management [23-24]. Kittur used BP neural network algorithm to model the high pressure casting process forward and backward. The die casting process is regarded as an input-output model, with the input parameters of fast firing rate, strengthening pressure, phase transformation point and holding time, and the output is surface roughness, hardness and porosity [25].

Scientific grasp of the evolution of human diseases, objective analysis of the causes and characteristics of public health emergencies and the harm to social life, put forward countermeasures and suggestions to deal with public health emergencies, update ideas, improve China's logistics support system, and build a high-level logistics support system. High quality professional team, with a standardized and orderly mechanism to calmly deal with public health emergencies, is an important part of improving government functions and work efficiency. The new features and new trends of the new generation of artificial intelligence technology include deep learning for fast processing and deep mining of big data, human-computer collaboration to assist human beings to complete high-risk repetitive work, complex system modeling and scenario simulation providing support for prevention and control decision-making, etc, It can meet the requirements of rapidity, timeliness and comprehensive coordination in public health emergency response.

2. Artificial Intelligence and Special Training of Higher Education Talents in Response to Public Health Emergencies from the Perspective of Psychology

2.1 Specialized Training of Higher Education Talents

Higher education is higher than secondary education, which is more standardized and professional on the basis of secondary education. Higher education is relatively far away from social production and social life. Its mission is to train Academic Elites and leaders for the society. The standard to measure the training quality of higher education personnel is academic. The goal of all universities is to pursue excellence and cultivate elites. Higher education has four basic meanings: higher education is regarded as a system, activity, content or result. First of all, when higher education is regarded as a system, it refers to the organizational system dominated by universities. In this system, each organization should follow certain ideas and rules to provide higher education. As an activity, higher education emphasizes the importance of relevant organizations for students to receive higher education. In terms of content, higher education means that the materials learned by the educated in the process of receiving higher education are not only limited to common sense, but also include advanced knowledge. As a result, the focus of higher education is to achieve its purpose, that is, what kind of people will be cultivated after receiving higher education. The nature of higher education is mainly reflected in the differences compared with other levels of education. It not only reflects the nature and general characteristics of education, but also has relative independence.

Talents refer to those who have certain professional knowledge or skills and can carry out creative work and contribute to the society. They are workers with high human resource ability and quality. The concept of talent training is the education and teaching idea of target design, ideal pursuit and corresponding training theme. It plays a role of "navigation" in the whole process of personnel training, and is an important basis for determining training objectives and norms. The goal of talent training is the starting point and end point of higher education activities, and also the goal and direction of talent training. To set up the goal of talent training in Colleges and universities, we should not only meet the needs of social development for talent types and specifications, but also meet the basic conditions of students and the overall development requirements of human beings. The training objectives of higher education not only determine the basic norms and quality standards of training talents, but also affect the construction of curriculum system and the selection of teaching contents and methods.

The process of personnel training is mainly composed of four parts: specialty setting, curriculum system, teaching process and training methods. Specialty setting is mainly subject division, which is based on two aspects: one is the need of social division of labor; the other is the internal logic of discipline system, which is the concrete embodiment of the basic norms of personnel training and employment. Curriculum system refers to a series of scientific and cultural knowledge and teaching practice activities which are reasonably designed and organized with corresponding training objectives and teaching rules; teaching process refers to the process in which students can systematically learn scientific and cultural knowledge, master basic skills, jointly develop intelligence and physical strength, establish a correct world outlook and develop good moral quality under the guidance of teachers. On the basis of mastering knowledge, educated people put forward higher development requirements for their own abilities. It not only emphasizes the transfer of knowledge and skills, but also pays more attention to the formation and development of students' correct concept, good moral quality and psychological quality. Training methods mainly refer to the teaching methods or teaching procedures used to complete some teaching objectives and tasks in teaching.

2.2 Application of Artificial Intelligence

Artificial intelligence is a simulation of human intelligence. Artificial intelligence is the basic theory, method and technology to study the law of human intelligent activities, to build an artificial intelligence system with certain intelligence, and to study how to make computers complete people's intelligent ability. How to use the software and hardware of computer to simulate some intelligent behaviors of human beings. From the perspective of thinking, artificial intelligence is not limited to logical thinking. Only through image thinking and inspiring thinking can we promote the breakthrough development of artificial intelligence. Mathematics is usually regarded as the basic science of many subjects. Mathematics has also entered the field of language and thinking. The theme of AI must also borrow mathematical tools. Mathematics not only plays a role in the scope of standard logic and fuzzy mathematics, but also enters the field of artificial intelligence. They will promote each other and develop faster.

Artificial intelligence is intelligent, practical and comprehensive. The so-called intelligence includes: the ability of feeling, perception, learning, reasoning, memory, judgment, proof, recognition, design, thinking, emotion and behavior in complex environment. At present, the development and application of artificial intelligence technology can be roughly divided into four directions: intelligent perception, intelligent thinking, intelligent learning and intelligent action. Intelligent perception includes pattern recognition and natural language understanding; intelligent thinking includes problem solving and expert system; intelligent learning ability refers to understanding and constantly discovering new knowledge, and conducting self summary and induction; intelligent action is a specific action in complex environment. Practicality or artificiality is an important feature of artificial intelligence. The emergence of artificial intelligence is based on the establishment of large-scale mechanized industry. It comes from the continuous improvement of production tools and the development of human needs. Its conception and design are closely related to human's real life and social practice. The simulation of human's thinking and action ability by artificial intelligence is the self choice of human beings after accumulating countless social practice activities. Artificial intelligence is not only the inevitable product of human practical activities, but also develops with the development of practical activities. The level of human practice determines the development level of artificial intelligence, and the continuous development of human practical activities promotes the development of artificial intelligence. The research and development of artificial intelligence technology is a comprehensive result.

In the past 50 years, artificial intelligence technology has developed rapidly, its technical

characteristics have been basically formed, the theory has been constantly improved, and the scope of application has been expanding. Artificial intelligence has been applied to problem solving, natural language understanding and processing, automatic theorem proving, expert system, intelligent control, intelligent system and intelligent interface, intelligent debugging and planning, pattern recognition, intelligent exploration, intelligent robot, intelligent multimedia, intelligent key agent, data mining and knowledge discovery, artificial life, etc

The mechanism of artificial intelligence in public health emergencies is mainly manifested in three aspects: first, artificial intelligence algorithms represented by deep learning are more and more applied to data intensive knowledge discovery, which not only promotes new discoveries and new explorations in the fields of physics, astronomy and life sciences, It also promotes the rapid shortening of the R & D cycle of some technologies and products, which is particularly helpful for the rapid R & D and screening of infectious diseases drugs and vaccines, traceability of infectious diseases viruses and virus gene sequencing. Second, the part of artificial intelligence has the ability of human perception and cognition. It can replace human labor in specific fields, and can liberate medical staff and front-line managers from high-risk and repetitive work. Third, modeling and optimization has always been an important branch of artificial intelligence, and has been widely used in highly complex, dynamic and uncertain physical systems. Meanwhile, in recent years, the use of artificial intelligence, data mining and other research on human group behavior simulation, economic and social problems is also increasing, This makes it possible to establish an intuitive, scientific and rapid decision support system in public health emergency management.

2.3 Psychology and Public Health Emergencies

The word psychology comes from Greek, meaning the science of the soul. Psychology is a science that studies the psychological phenomena, psychological functions and behaviors of human beings and animals. It is not only a theoretical discipline, but also an applied discipline. It includes theoretical psychology and applied psychology. Psychological research involves many fields, such as perception, cognition, emotion, personality, behavior and interpersonal relationship. It also involves many areas of daily life, such as family, education, health and so on. The role of individual psychological function in social behavior and social dynamics; at the same time, it is also related to neuroscience, medicine, biology and other sciences, because the physiological functions discussed in these sciences affect the individual's thinking.

Public health emergencies refer to major infectious diseases, unexplained group diseases, major food and occupational poisoning and other events that seriously affect public health. The characteristics of public health emergencies are as follows: 1. It contains two meanings: one is that the accidental factors of public health emergencies are large, and there are no symptoms before the occurrence of common things; the other is that after the public health emergencies, people must make analysis and judgment in a very short time. 2. Global. Unlike war, the spread of disease is not divided into regions and boundaries, but through the cross contact between people. 3. Unconventional. In the face of sudden disasters, there are many unpredictable factors. Just like the outbreak of SARS, although it has been controlled at present, human beings still can not solve this mystery, and there is a lack of specific and targeted prevention and treatment measures. 4. Danger. Any public health emergency has a certain degree of risk to both parties and prevention and control personnel. Patients can lead to disability and death, and the same risks are faced by treatment personnel.

When the social impact of emergency and control is more and more significant. Emotional problems caused by epidemics, diseases, life, work and social and interpersonal relationships are very prominent. The psychological problems in public health emergencies are mainly manifested as follows: first, the psychological state of tension and anxiety. It should be said that when a sudden public health event occurs, the public's tension and anxiety are very normal, which reflects the public's attention to self-life. Therefore, in a certain state of tension and anxiety, the public can take corresponding measures more carefully to protect their own life, health and safety, Excessive fear and blind stress behavior are harmful to social response to public health emergencies. Second, blindly optimistic or indifferent psychological state. This kind of people tend to be indifferent to the progress and defense strategy of sudden public health events, and take no protective measures. They just let the development of the situation and hold a fluke mind, and think that they can't get sick in their own body. This kind of blindly optimistic psychological state is a very immature and irrational psychological response mechanism, which is extremely unfavorable to the control of public health emergencies, The apparent optimism and indifference of these people is just a cover up of great fear and panic in their hearts. Third, fear syndrome. It can also be called "acute stress disorder". As a basic emotional state, fear is an

emotional experience of trying to get rid of a certain situation or get rid of a certain situation and suffer from powerlessness. This is also known as fear, which is a defensive response to specific stimuli.

3. Experiments Materials and Methods

3.1 Subjects

Questionnaire participants: college students come from 102 colleges and universities in China, which are divided into three regions according to regions: Eastern, central and western;

All the medical staff came from clinical, medical technology diagnosis department and hospital management department. These experts have been working hard in the front line of medical treatment for many years and have rich experience in clinical treatment, diagnosis, nursing and hospital management.

Drug solubility prediction object: input the molecular structure of 60 drugs into the software, and calculate 11 parameters of each drug, including molecular weight, average molecular weight, total atomic polarizability, average atomic polarizability, number of hydrogen donors, number of hydrogen acceptors, ghose Crippen molar refractive index, topological polarization area of N, O atoms, N, O, S, The distribution coefficients of oil and water in mlogp and Moriguchi were determined.

3.2 Experimental Methods

Results: a total of 18654 questionnaires were distributed, 16541 were recovered, and the total effective questionnaires were 13456. Among them, the effective rate of college students was 72.24%, and that of medical staff was 61.01%.

Prediction method of drug solubility: BP neural network model of characteristic solubility of compound was established by using training group samples. The input parameters are average molecular weight, hydrogen donor number, hydrogen receiving number, topological polarization area, ghose crippen oil-water partition coefficient, and the output parameter is $\log(1/so)$. Before modeling, input variables and outputs are normalized respectively. The transfer function and output function are logsig, and the training function is traingdx. The established BP network model was used to predict the characteristic solubility of the test group samples, and compared with the actual characteristic solubility, the relative error, square root correlation coefficient of mean square error and AIC were calculated.

4. Analysis of Application of Artificial Intelligence and Special Training of Higher Education Talents in Response to Public Health Emergencies from the Perspective of Psychology

4.1 Analysis on the Quality of Talent Cultivation in Higher Education

From the three functions of higher education, talent training is the most important function of higher education. In order to evaluate the quality of higher education, we mainly study the quality of personnel training in Colleges and universities, that is, the quality and ability of students in all aspects. Large scale survey of different types of universities in different regions of China. The average value of talent training quality in Colleges and universities is shown in Table 1.

Table 1: Average table of talent training quality in Colleges and Universities

	M	SD	Sort
Ideological and Moral Level	3.56	0.93	1
Professional Theoretical Literacy	3.48	0.89	2
Practical Ability	3.37	0.96	6
Ability to Adapt to Society	3.42	0.95	5
Autonomous Learning Ability	3.35	0.99	7
Logical Thinking Ability	3.44	0.93	4
Innovation Ability	3.29	0.98	8
Unity and Assistance Ability	3.47	0.95	3

From the above data, it can be seen from the mean value m that the highest average value of "Ideological and moral level" is 3.56, followed by the average value of "professional theoretical literacy" of 3.48, "unity and cooperation ability" of 3.47, "logical thinking ability" of 3.44, "ability to

adapt to society" of 3.42, and average of "practical ability" of 3.37, And "innovation ability" is the lowest, with an average of 3.29. The average analysis of talent training quality in Colleges and universities is shown in Figure 1.

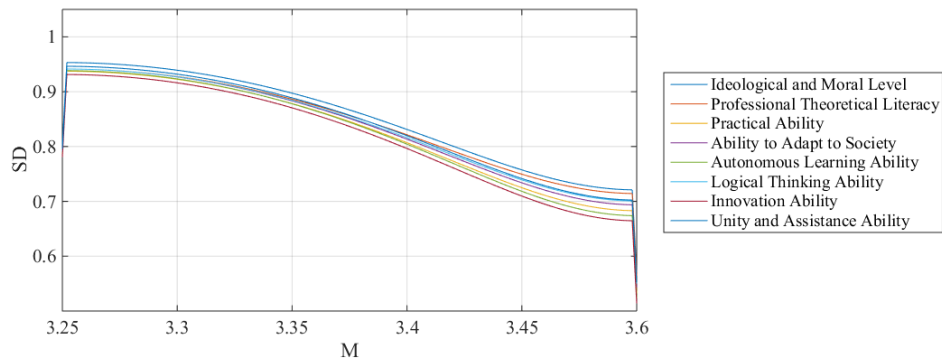


Figure 1: Analysis on the Average Value of Talent Training Quality in Colleges and Universities

From the analysis of the quality of talent training in higher education, we can see that the development of talents in Higher Education in China is unbalanced, among which students' innovation ability is the lowest. Innovation ability is the necessary ability of high-quality talents, and the cultivation of innovative talents is an important task of higher education. It can be seen that the cultivation of innovation ability is an important task of higher education. In view of the cultivation of College Students' innovative ability, colleges and universities should actively carry out various conditions, and consciously cultivate students' innovation ability in teaching activities and extracurricular activities, which can be carried out from the following aspects: learning and enhancing their innovative consciousness; colleges and universities should actively carry out innovative education activities to create a good style of study; to strengthen teachers' innovation ability and establish diversified quality View.

4.2 Analysis of Coping Ability of Medical Staff in Public Health Emergencies

Basic information, knowledge system, practice and skills are the first level indicators. "Basic information" includes: age, working hours, education level, professional title, health status, educational background and professional background. "Knowledge system" includes basic cognition, basic knowledge, professional knowledge, management knowledge, legal knowledge, psychological knowledge and other knowledge. "Practices and skills" include: expertise, training, practice, participation, experience, communication, coordination and risk taking. The proportion structure of the first level index importance score is shown in Figure 2.

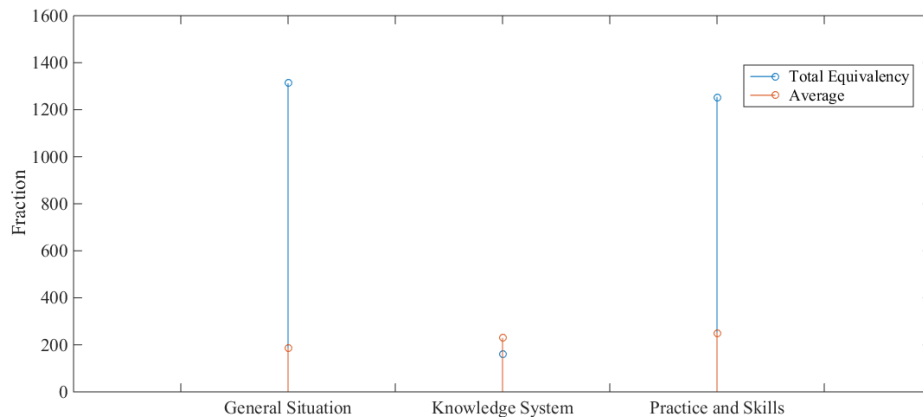


Figure 2: Proportion Structure of Importance Score of First Level Index

It can be seen from the above data that the "practice and skills" of medical staff in public health emergencies accounted for 38%, the "knowledge system" accounted for 34%, and the "basic profile" only accounted for 28%. It is suggested that we should pay attention to the improvement of "practice

and skills" ability when training professionals dealing with public health emergencies.

4.3 Artificial Intelligence Cointegration Test

In order to test the stability of panel data, it is necessary to test the unit root of panel data. Unit root test is the premise to judge whether panel data is stable or has the same single integer order. LLC test method is used to test the unit root of panel data. The variables in the model passed the unit root test at the significance level of 1%. It shows that the original data are all stationary sequences, and they are all zero order integers. According to the results of unit root test, the panel cointegration Kao test is carried out for the variables in each model. The initial assumption is that there is no panel cointegration relationship. The Kao test results of Panel Data Cointegration are shown in Figure 3.

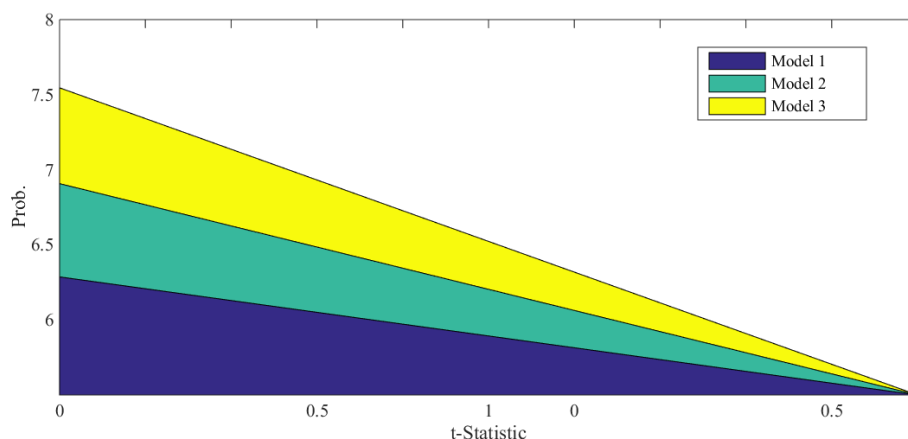


Figure 3: Kao Test Results of Panel Data Cointegration

The test results show that: the probability values of the statistics are 0.0000, strongly reject the original hypothesis, indicating that the variables of each model have passed the cointegration test, and then show that there is a long-term cointegration relationship between the explained variables and all the explained variables in the model, so the original equation can be directly regressed on the basis of the original data.

4.4 Prediction Model Analysis of Biopharmaceutical Classification System (BCS)

The classification of drugs in BCS depends on their solubility and permeability. The characteristic solubility model and absolute bioavailability model were established. Two models for predicting the absolute bioavailability of oral drugs were established by neural network. The input variables of the former are 7 theoretical parameters, which can be explained clearly, while the latter has 15 input variables, including the above variables and 8 variables screened by genetic algorithm. In contrast, the prediction efficiency of the latter is higher. The accuracy of solubility prediction, permeability prediction and biopharmaceutical classification system were 93.7%, 81.1% and 75.1%, respectively. The accuracy comparison of MRL and ANN is shown in Table 2.

Table 2: Comparison of Prediction Accuracy between MRL and ANN

Model		MRL	ANN
REC	Training Set	0.79	0.88
	Testing Set	0.78	0.91
RMSE	Training Set	0.93	0.75
	Testing Set	0.96	0.61
AIC	Training Set	172.37	158.73
	Testing Set	40.07	33.78

By comparing the prediction of characteristic solubility between stepwise multiple linear regression and artificial neural network, it is found that the prediction efficiency of artificial neural network is higher than that of stepwise multiple linear regression in relative error (RES), AIC and square root. The relationship between the mean square error (RMSE) and the correlation coefficient (R) between the predicted value and the actual value. Artificial neural network has high accuracy in predicting characteristic solubility, which can be used to predict unknown samples. MRL and ANN prediction

accuracy analysis, as shown in Figure 4.

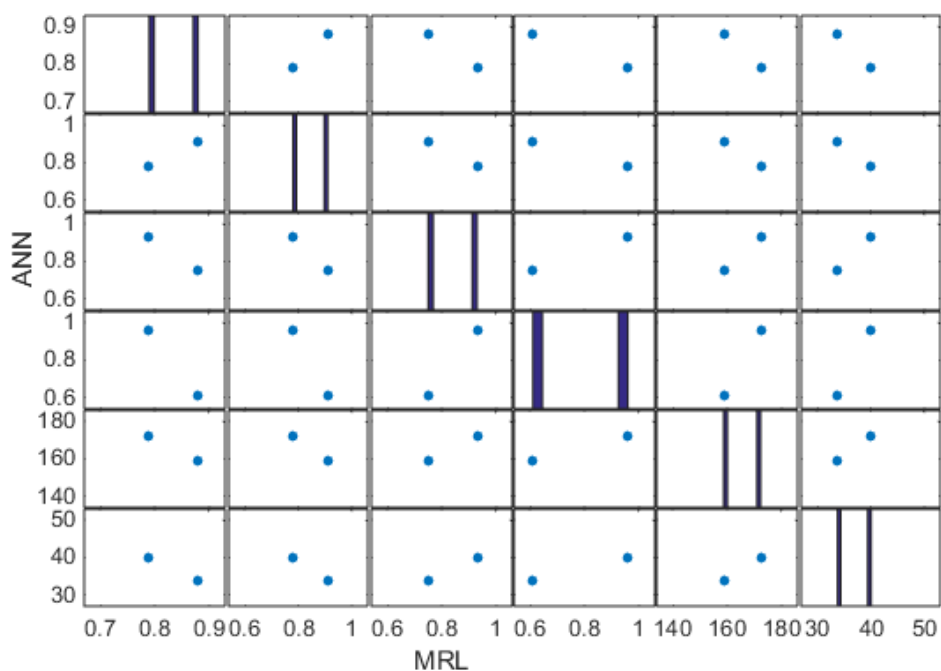


Figure 4: MRL and ANN Prediction Accuracy Analysis

The stepwise multiple regression model and artificial neural network model for predicting the characteristic solubility of drugs show that the prediction efficiency of neural network is better than that of linear regression model, and the established drug characteristic solubility model can be used to predict the solubility of unknown drug molecules. Artificial intelligence algorithm is used for rapid drug development and drug screening of infectious diseases. Artificial neural network is an important branch of artificial intelligence technology. The artificial neural network based on artificial intelligence has the ability to identify and approximate any complex nonlinear system, and has certain fault tolerance ability. It can optimize multiple process parameters simultaneously in the preparation process.

5. Conclusions

This paper reviews the key issues to be solved in all aspects of emergency management of public health emergencies, and analyzes the ability of higher education personnel training in response to public health emergencies and the application mechanism of artificial intelligence in the field of rapid development of infectious drugs and virus traceability. This paper focuses on the analysis of the problems existing in the current higher education personnel training process in response to public health emergencies, analyzes the problems, and puts forward the idea of solving the problems.

There are obvious differences in the maturity of various applications of artificial intelligence in response to public health emergencies. Medical image diagnosis, intelligent robots, artificial intelligence monitoring and early warning have been able to provide services in the front line of epidemic prevention and control. Rapid drug research and development and virus traceability have not yet formed a standardized application trend, The real-time monitoring and comprehensive decision-making model of major infectious diseases based on artificial intelligence is still in preliminary exploration.

The problems existing in the talent training of public health emergency response are extremely complex problems, the causes of which come from various aspects, and it is not a matter of day and night to solve them. The analysis of various problems in this paper is not comprehensive and profound. In order to give full play to the role of artificial intelligence in response to public health emergencies, there are still technical and application problems to be solved. First of all, artificial intelligence technology itself needs further development. Secondly, the innovative application potential of deep integration of artificial intelligence and big data, blockchain, 5g and other technologies needs to be explored. Finally, the basic conditions for the application of artificial intelligence technology need to be

further improved.

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