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Retraction

Retracted: Predicament and Thinking of College Students' Employment and Entrepreneurship under the Background of Supply-Side Reform

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] M. Yu, "Predicament and Thinking of College Students' Employment and Entrepreneurship under the Background of Supply-Side Reform," *Mobile Information Systems*, vol. 2022, Article ID 1495123, 10 pages, 2022.

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Research Article

Predicament and Thinking of College Students' Employment and Entrepreneurship under the Background of Supply-Side Reform

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Based on the analysis of the current employment and entrepreneurship of college students based on the supply-side structural reform, the employment and entrepreneurship guidance of college students is far from meeting the needs of the society. Therefore, the innovation of talent training mode needs to become an important goal of college development at this stage. Based on the previously mentioned background, this paper included 853 university students as research objects and their data from 2010 to 2018. First, we used the BP neural network as the starting point to conduct in-depth research, selected the sequential model algorithm based on the Keras framework, built a one-layer network and six types of eigenvalue labels to predict the development direction of college students' employment and entrepreneurship, and evaluated the prediction accuracy of the model. This proves that the prediction effect of the model has the value of continuing in-depth research, and then, the prediction model is further optimized. Then, we added a three-layer network to the model and an SGD optimizer and used Softmax as the regression function to verify that the optimized model predicts well. The average accuracy of the prediction model constructed in this paper is 81.48%, the standard deviation is 4.34%, the Acc value of the model is stable at around 0.835, and the loss value is stable at around 0.3, which proves that the prediction model has a good prediction. It provides a set of application models that can be used for reference for the combination of BP neural network related knowledge and college students' employment and entrepreneurship development direction prediction. Based on the background of the supply-side structural reform, this paper mainly analyzes and researches the current employment and entrepreneurial paths of college students in my country, hoping to provide reference for the cultivation of talents in colleges and universities.

1. Introduction

In the report of the 19th National Congress of the Communist Party of China, General Secretary Xi Jinping proposed to "deepen supply-side structural reform." To build a modern economic system, we must focus on developing the real economy, take improving the quality of the supply system as the main direction of attack, and significantly enhance the quality of China's economy. The employment problem of contemporary college students is very prominent, but many employers still have talent shortages. On the one hand, under the influence of the country's expansionary policy, the number of college students has been increasing year by year in recent years, while the employment positions that the society can provide are minimal, and new changes have occurred in the difficulty of college students' employment. On the other hand, many employers need high-tech innovative talents, and the number of university graduates who meet this aspect is very limited.

The higher education supply system plays a vital role in the transformation and upgrading of China's economic structure and undertakes the important task of exporting comprehensive talents to society. To adapt to the transformation of China's economic and social structure, the talent output of colleges and universities must conform to the law of the operation and development of the economic market [1]. The supply-side reform of higher education should pay more attention to the quality of education and teaching of college teachers and the comprehensive quality of students, to better connect the professional setting of colleges and universities with social needs and further promote the transformation and development of China's

economic field. The reform in the field of higher education should focus on the organic combination of supply and demand and cultivate comprehensive talents suitable for the development of the market economy, so as to adapt to the transformation and upgrading of China's social and economic structure [2].

Since entering the new era, the reform of higher education should be comprehensively promoted, the education of colleges and universities should focus on talent training, and colleges and universities should vigorously build a new mechanism for comprehensive, whole-process, and deep integration of social collaborative education. Under the background of higher education supply-side reform, colleges and universities should establish a talent training mechanism in close cooperation with social employment departments, clarify the talent standards required by the market, jointly formulate talent training programs, improve the level of teaching practice, transform social high-quality educational resources into educational content [3], and collaborate with relevant departments to manage talents. Higher education needs to carry out supply-side reforms to better meet the needs of the market, be guided by social needs, and cultivate high-quality talents that meet social needs [4]. In recent years, some colleges and universities have unilaterally pursued the enrollment rate and enrollment volume, ignoring their own school-running conditions and educational resources, resulting in duplication and homogeneity of majors in colleges and universities [5]. The professional setting structure of colleges and universities is not optimized, the dynamics and market adaptability are insufficient, and the degree of matching with the market is low. Colleges and universities can use big data technology to accurately predict market demand, increase communication and coordination with the market, scientifically adjust the layout and structure of disciplines, and fully realize the supply balance of higher education [6]. With the gradual increase in the number of fresh graduates in our country, the upgrading of the industrial structure has brought about an increase in the employment pressure of college students. The decline in the teaching quality of colleges and universities makes it difficult for talent training to meet the needs of the market. The employment market for college students is not perfect, which affects the employment of college students [7]. The process of urbanization is accelerating, and urban jobs are in short supply. The backward employment concept is difficult to adapt to the requirements of the times. There is gender discrimination in employment positions. The employment pressure on female college students is high. Difficulty starting a business is easy to cause blows [8]. These problems are all in the new situation. Compared with the past, the current college students are facing more and more employment problems. The employment of college students has become one of the urgent problems to be solved at present, and with the continuous changes of social and economic forms, college students' entrepreneurship has become the main means to solve this problem. College students to start a business must rely on the entrepreneurial environment. The so-called entrepreneurial environment mainly refers to the collection of all factors that may have an impact on the entrepreneurial process. The social entrepreneurship environment is the carrier of college students' entrepreneurship, and they will be affected by the entrepreneurial environment during the entire entrepreneurial process of college students. Therefore, the government attaches great importance to the work of optimizing the entrepreneurial environment. At present, many literature studies believe that the entrepreneurial behavior of college students needs various incentive policies and guarantee policies to be carried out scientifically and effectively. In other words, the success of entrepreneurship is inseparable from a suitable entrepreneurial environment.

2. State of the Art

College students have poor professional theoretical foundation, cannot master professional skills proficiently, and have weak practical ability. According to the feedback from the employer, some graduates are not proficient in mechanical memory professional knowledge, and their understanding is not thorough. The knowledge they have learned cannot be used to solve problems in actual work. They are hard to be favored. Graduates do not recognize the importance of social practice activities and participate in less social practice activities, resulting in weak hands-on ability. In the talent training model of colleges and universities, scores are still the main indicator for evaluating students, and they do not pay attention to the cultivation of practical ability to apply theory. In the assessment system, the practical ability of students' practice is not really integrated into it.

Colleges and universities have not truly integrated career development planning into the talent training system, the time is incoherent, the content is not systematic, the theoretical teaching is emphasized, and the teaching is not done according to aptitude. Graduates do not have a strong awareness of "career planning," their career goals are ambiguous, they do not have a clear career vision, and they do not plan for career development. The life of a college student is like being a monk for a day, and just passing by. In the face of fierce competition when applying for a job, college students feel confused and have no opinion, follow the herd mentality for employment, and think that the unit with many applicants is a good unit. They cannot match the personnel and jobs, resulting in low employment quality, unstable work, and high turnover rate of graduates.

Entrepreneurship education mainly trains entrepreneurs from the three levels of consciousness, thinking, and ability [9]. From the perspective of social development, entrepreneurship education is an important task entrusted to colleges and universities by this era of rapid economic development. From the perspective of colleges and universities, doing a good job in entrepreneurship education is the proof that higher education keeps pace with social development. Sexuality, but also hope, is a community of times and urgency [10, 11].

Bejerholm and Larsson point of view is that the goal of entrepreneurship education should be to help college students who are confused to find their own position, identify their goals and directions, make long-term scientific

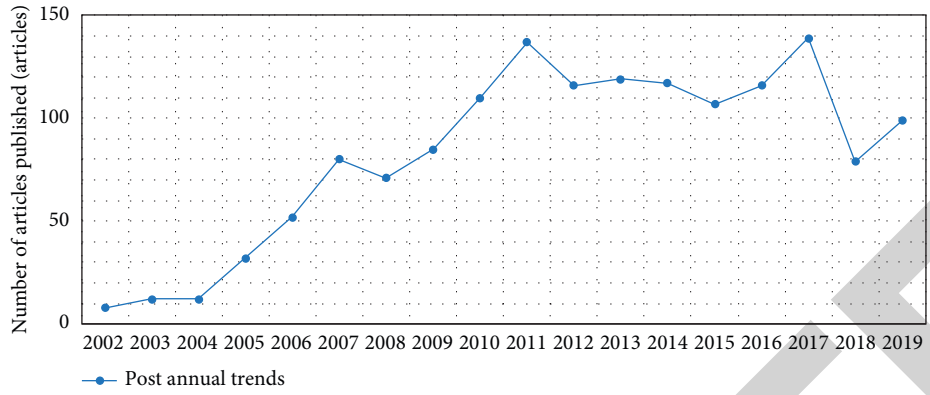

Figure 1: Literature search data map.

planning for their careers, and finally achieve their own entrepreneurial goals and realize their own social value [12]. Innovation is the root of social and economic development. Entrepreneurship promotes the advancement and development of society. Entrepreneurship education is the foundation of all this. Scientific and effective entrepreneurial education can cultivate many entrepreneurial talents for the society, and these talents can create more social wealth. College students are fresh blood about to enter the society, full of passion and courage. Encouraging college students to start businesses is not only conducive to improving the current situation of employment difficulties but also conducive to social stability and sustainable development [13].

Compared with Western countries, the research and practice of entrepreneurship education model in China is still short, and related projects are only in their infancy, such as (1) entrepreneurship education, (2) KAB (Know About Business, KAB), (3) SIYB training, (4) China Youth Entrepreneurship International Program, and so on. There are still many problems to be solved. The setting of entrepreneurship education courses and teaching models is still in the stage of imitation and exploration. Most of the forms are greater than the content [14]. A mature and complete entrepreneurship education system suitable for China's national conditions has not yet been formed. There is still a lack of quantitative in-depth research on the level [15].

There are still many problems to be solved in the employment and entrepreneurship of college students. The theme of "student employment and entrepreneurship" was used to manually exclude 223 documents unrelated to keywords. The trend chart of the number published in the literature is shown in Figure 1. Among them, 49.3% are involved in graduate employment and entrepreneurship guidance.

3. Methodology

3.1. Artificial Neural Network Method and Neural Network Model. Artificial neural network (ANN) was born in the late 1940s. Due to its advantages of information distribution and storage, parallel processing, and self-learning ability, it has been widely used in information processing, pattern recognition, intelligent control, and system modeling. It has been more and more widely used in other fields [16].

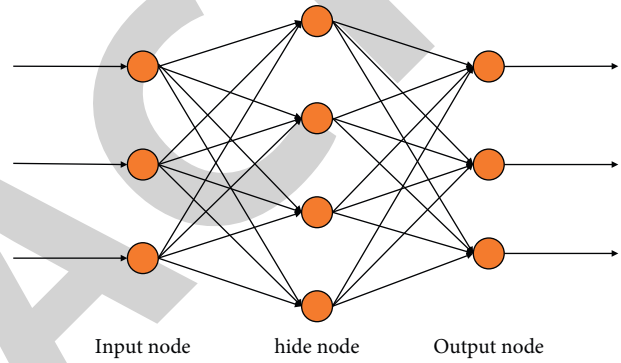

Figure 2: Neural network model.

BP neural network is a typical model of artificial neural network. It is a multilayer feed-forward network (multiple-layer feed-forward network, referred to as BP network) based on the error backpropagation algorithm. The network not only has input nodes and output nodes but can also have one or more hidden layer nodes [17]. A typical BP neural network model with input, output, and hidden layers is shown in Figure 2.

For the input signal of the BP neural network, it must first propagate forward to the hidden node, and after passing through the action function, the output information of the hidden node is propagated to the output layer node, and finally, the result is output [18].

If each layer of the BP neural network has N processing units and the change function of the neurons is a sigmoid function,

$$f(x) = \frac{1}{1 + e^{-x}}. \tag{1}$$

This action function makes the output quantity a continuous quantity between 0 and 1, so any nonlinear mapping rule from input to output can be realized. The artificial neuron takes the information it receives (the output of the previous layer) $0o, o, \ldots, o$. Use $W1, W2, \ldots, Wn - 1$. The connection strength forms its own input I in the form of a dot product and then converts it by a function to obtain the output O of this unit [19].

In addition, the BP neural network training set includes M sample pattern pairs (X), and for the pth training sample ($p = 1, 2, \ldots, M$). If the sum of the inputs of unit j (that is, the activation function) is denoted as a, the output is recorded as op, and then,

$$a_{pj} = \sum_{j=0}^{n} w_{pj} o_{pj},$$
$$o_{pj} = f\left(a_{pj}\right) = \frac{1}{1 + e^{-a_{\infty}}}. \tag{2}$$

If the initial value of the network is set arbitrarily, then, for each input mode p, the network output generally has an error with the expected output. The network error is defined as

$$E_p = \frac{1}{2} \sum_{j} \left(d_{pj} - o_{pj}\right)^2, \tag{3}$$

where d represents the expected output of the output unit j of the pth input mode. At the same time, the essence of the network learning rule 8 is to use the gradient steepest descent method to make the weight change along the negative gradient direction of the error. The change of the weight w is recorded as $Apwj$ because

$$\frac{\partial E_p}{\partial w_{ji}} = \frac{\partial E_p}{\partial a_{pj}} \frac{\partial a_{pj}}{\partial w_{ji}}$$
$$\delta_{pj} = -\frac{\partial E_p}{\partial a_{pj}}, \tag{4}$$
$$\Delta p w_{ji} = -\eta \frac{\partial E_p}{\partial a_{pj}} o_{pj}.$$

In the process of network learning, the error calculation of the output layer and the hidden layer is not the same. When representing the output of the output layer unit, the error is

$$\delta_{pj} = f'\left(a_{pj}\right)\left(d_{pj} - o_{pj}\right). \tag{5}$$

When op represents the output of the hidden layer, its error is

$$\delta_{pj} = \frac{\partial E_p}{\partial a_{pj}} = -\frac{\partial E_p}{\partial p_{pj}} \frac{\partial o_{pj}}{\partial a_{pj}} = -\frac{\partial E_p}{\partial o_{pj}} f'\left(a_{pj}\right)$$
$$\frac{\partial E_p}{\partial o_{pj}} \sum_{k} \frac{\partial E_p}{\partial a_{pk}} \frac{\partial a_{pk}}{\partial o_{pj}} = \sum_{k} \partial_{pk} w_{kj}, \tag{6}$$

where k represents the previous layer unit connected to the output of unit j, namely,

$$\delta_{pj} = f'\left(a_{pj}\right) \sum_{k} \delta_{pk} w_{kj}. \tag{7}$$

It reflects the error correction of the hidden layer unit 8. It reflects the error correction of the hidden layer unit by weighted summation of all connected to the output of unit j. It reflects the error correction of the hidden layer unit.

(1) Establish a network model, initialize the network, and learn parameters.

(2) Train the network by learning the training samples until the learning requirements are met.

(3) In the forward propagation process, for the input of the given training mode, calculate the output value of the network and compare it with the expected value. If the error cannot meet the accuracy requirements, the error is propagated back; otherwise, go to (2).

(4) Backpropagation process.

The learning process of BP neural network is essentially an iterative process, which consists of forward propagation and backpropagation [20]. At this time, the characteristic data of the samples to be learned are input into the trained network, and then, the network can automatically "learn" the attributes of the samples according to memory as shown in Figure 3.

3.2. Dimensional Analysis and Data Preparation of the Impact of College Students' Employment and Entrepreneurship Development Direction. Refer to the six categories of dimensions developed by the "College Student Evaluation Network" developed by the Education Management Information Center of the Ministry of Education for the comprehensive quality evaluation system of college students: academic quality evaluation, moral quality evaluation, literary and sports quality evaluation, psychological quality evaluation, innovation quality evaluation, and ability. The quality assessment and the dimension of the employment and entrepreneurship development direction of college students adopted by Yuan Jiaqian comprehensively determine the impact dimension of this paper, as shown in Table 1.

A total of 853 university students were included as research objects and their data from 2010 to 2018, and according to the six types of employment and entrepreneurship development directions previously mentioned, the comprehensive data and personal technical information data of 853 students in the school for four years were collected as the data samples of this experiment.

The data sources of this paper are the basic information database of students, the comprehensive database of four-year academic performance in school, the student education management database, and the graduate employment information database.

With the help of teachers and counselors from the relevant departments of the college, the relevant data of 853 students from 2010 to 2018 were successfully obtained, including the student's personal information form, academic record form, school activity bonus form, award evaluation publicity form, and employment information form.

(1) *Data Cleaning.* Because these data come from different management systems of the school, the initially obtained data is very messy, there are many duplicate or invalid attributes, and not all attributes in the student data table are valuable for this

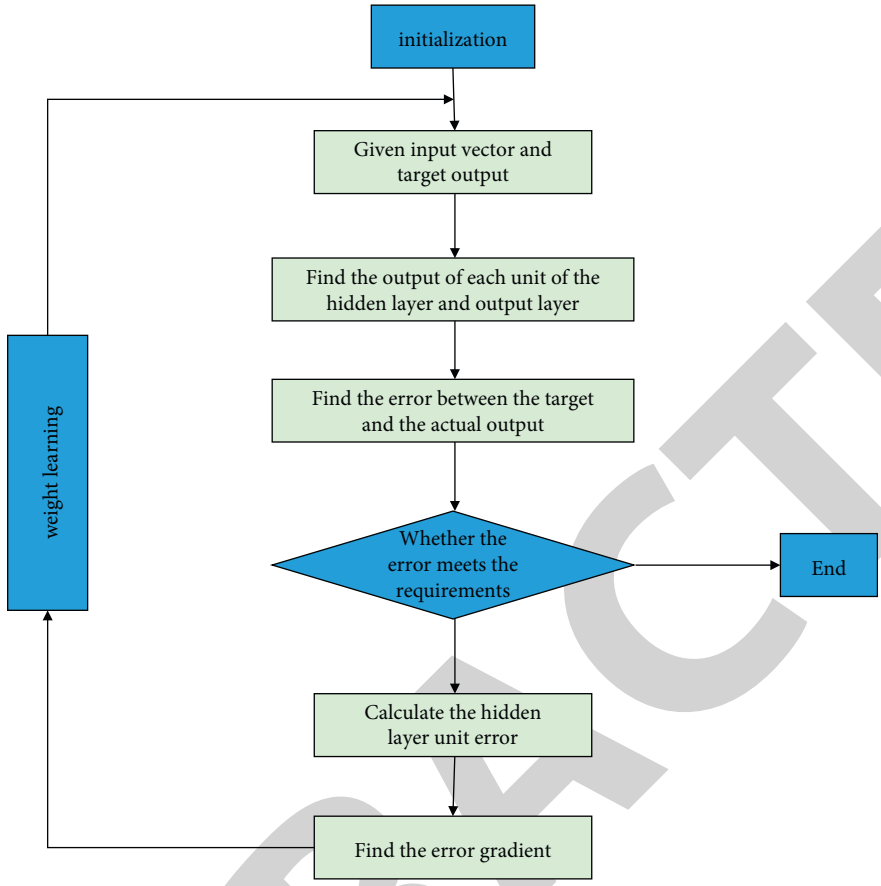

Figure 3: Neural network calculation flow chart.

Table 1: The dimension of the influence of the development direction of college students' employment and entrepreneurship.

Data name	The data shows
Academic performance	The cumulative academic performance of each subject in four years of college students
English language proficiency	It is divided into three types: pass GET4, pass GET6, and fail the GET exam
Political civilization	Including students' political status, group day activities during school, advanced class evaluation activities, and classmates' mutual evaluation index
Technological innovation	Including various scientific and technological competitions, academic seminars and innovation and entrepreneurship activities participated in during the school
Stylistic arts	Including various cultural activities and sports competitions participated in during school
Social volunteering	Including various school-organized social welfare contribution activities and personal social practice and volunteer services during school

experiment, so the obtained data must be further analyzed, including the deletion of the grades of absent students, the grades of students who did not enroll in courses, and the information of students who were suspended from school and dropped out.

(2) *Data Integration.* The scattered student information is statistically integrated into the annual data summary table of different classes of students, which contains all the impact dimension data of a certain class of students in a certain year. Some student information is listed, as shown in Table 2.

By reviewing the literature and sorting out the influencing factors of college students' employment and entrepreneurship development direction used in various research at present, the influencing dimensions of college students' employment and entrepreneurship development direction adopted in this experimental model are determined. On this basis, the source of the experimental database is determined, and the data is collected. The method proposed in this paper is to integrate, clean up, and convert the collected comprehensive data of students to form a standardized dataset, so as to lay a solid data foundation for subsequent research.

4. Result Analysis and Discussion

4.1. Implementation and Evaluation of the Prediction Model Algorithm for the Development Direction of College Students'

Table 2: Annual data information table of a certain class of students.

Serial number	Academic credits	English language proficiency	Political civilization	Technological innovation	Stylistic arts	Social volunteering	Graduation destination
001	1448	0	7.7958	0.9	2.42	0.3	Employment
002	1375	0.2	5.3765	0	0.3	0	Ascending
003	1495	0.4	8.226	7.98	3.5	0.34	Employment
004	1703	0.2	6.9803	0	1.86	0	Employment
005	1711	0.2	5.0884	0	0.5	0	Employment
006	1632	0.2	7.0121	7.42	0.3	0.15	Employment
007	1523	0.2	4.545	4.06	0.32	0	Ascending
008	1378	0.2	6.0566	0	3.92	0	Employment
009	1477	0.4	4.9982	0.2	0.35	0	Not employed
010	1743	0.2	8.6781	4.86	2.9	0.3	Employment

Employment and Entrepreneurship. Through the analysis and determination of the impact dimension of the development direction of college students' employment and entrepreneurship development and related data preparation, a normative dataset that can be used in the experiment is formed. This chapter will focus on the algorithm design ideas and processes of the prediction model for the development direction of college students' employment and entrepreneurship, the basis for selecting the evaluation indicators of the prediction model, the implementation of the basic prediction model and its evaluation, the optimization model, and the optimization model evaluation process, and the algorithm is proved through experiments. The prediction effect is good and has certain application value.

This prediction model evaluation method adopts the comprehensive evaluation of the Acc evaluation model and the loss function. Before introducing the features and benefits of the Acc evaluation model, it is important to understand the ROC curve. The output result of the two-class classifier is determined by the output probability and a predetermined probability threshold. The most used threshold is 0.5; that is, a positive sample is greater than 0.5, and a negative sample is less than 0.5. If the threshold is increased, the probability of a wrong prediction will decrease, but the probability of a correct prediction will also decrease. If the threshold is decreased, the probability of a correct prediction will increase, and the probability of a wrong prediction will also decrease and then rise. In fact, the selection of this threshold also reflects the classification ability of the classifier to a certain extent. The ROC curve is the curve used to measure the classification ability of the classifier.

As shown in Figure 4, the horizontal axis of the ROC curve is false positive rate (FPR), also called specificity, and the vertical axis is true positive rate (TPR), also called recall rate. The simplest explanation of FPR is the probability of predicting negative samples as positive. Obviously, the smaller the FPR value, the better the prediction effect. TPR is the probability of predicting positive samples as positive; the larger the TPR value, the better the prediction effect. It can be seen from the example of the ROC curve that its abscissa and ordinate are between [0, 1], and then, the area of the ROC curve is between 0 and 1.

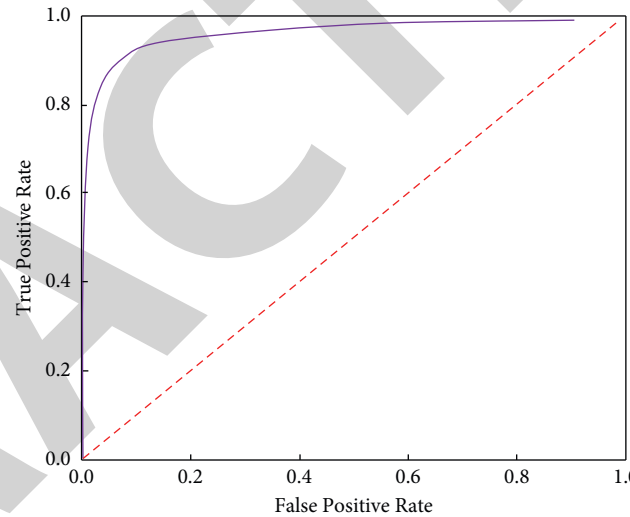

Figure 4: ROC curve example.

To better illustrate the nature of the ROC curve, we should explain the four special points and diagonal lines on the curve: (0, 0) point represents that both FPR and TPR are 0, indicating that the classifier predicts all samples to be negative, and the prediction result is meaningless; (0, 1) point represents that FPR is 0 and TPR is 1, indicating that the classifier predicts all samples correctly, and the effect is the best; (1, 0) point represents that FPR is 1 and TPR is 0, indicating that the classifier predicts all samples incorrectly, and the effect is the worst; (1, 1) point represents that both FPR and TPR are 1, indicating that the classifier predicts all samples to be positive, and the prediction results are meaningless.

The diagonal line is TPR = FPR, which means that the accuracy of the prediction result is 50%, and the prediction effect is equivalent to random classification.

Based on the previously mentioned explanations, the following conclusions are drawn: the closer the ROC curve to the upper left corner, the better the prediction accuracy of the prediction model.

The ROC curve can reflect the effect of the classifier to a certain extent, but it is not clear and intuitive enough. The Acc curve of the Acc evaluation model makes up for the deficiency of the ROC curve. As shown in Figure 5, the value of Acc is the ROC. The size of the area enclosed by the curve

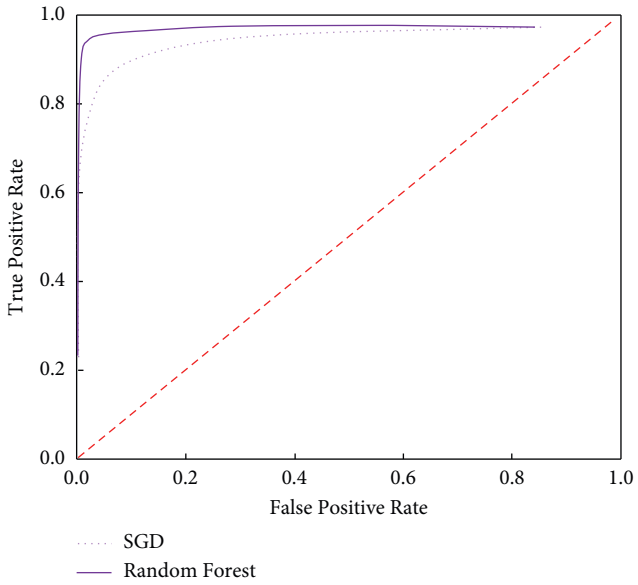

Figure 5: Example of Acc curve.

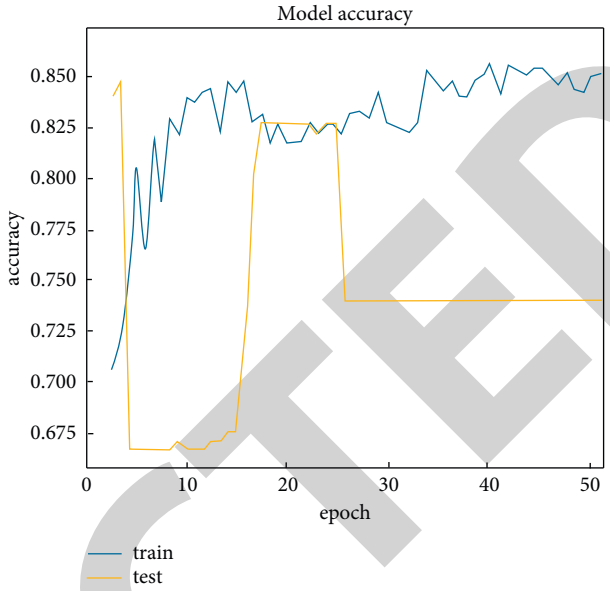

Figure 6: Acc value curve of prediction model.

and the X-axis, and the value can intuitively reflect the prediction effect; that is, the larger the value, the better the prediction effect, and the smaller the value, the worse the prediction effect.

The Acc value of the prediction model is shown in Figure 6. The Acc value of the test set is stable at around 0.745, and the Acc value of the training set is stable at around 0.855.

The loss value of the prediction model is shown in Figure 7. The loss value of the test set is stabilized from 4.8 to about 0.4, and the loss value of the training set is stabilized from 4.4 to about 0.3.

By comprehensively considering the Acc value and loss value of the prediction model, it can be proved that the prediction model has a good prediction effect, and further in-depth research and optimization experiments can be carried out.

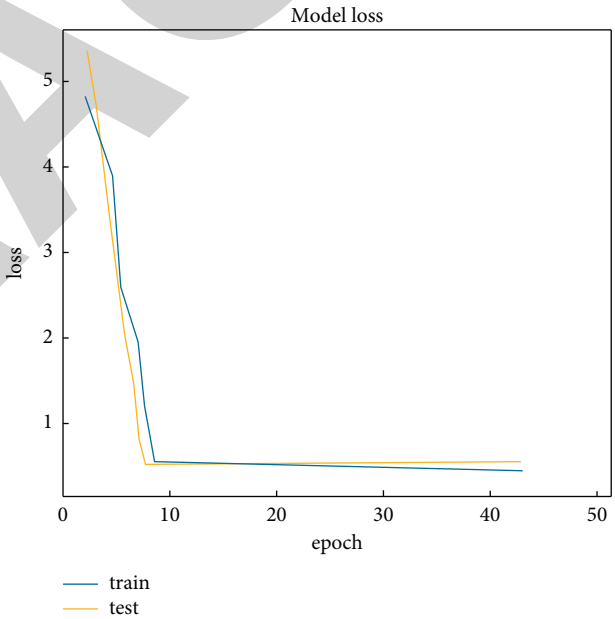

Figure 7: Loss value curve of prediction model.

4.2. Prediction Model Optimization. To further optimize the prediction model and make the prediction model have better prediction effect, the algorithm used in the experiment is further studied in this paper.

The current prediction model has established a sequential model including one layer of network and six types of eigenvalue labels. Next, the basic model will be further optimized from the following three aspects:

(1) Add a network layer to the base model. From the original one-layer network structure to a three-layer network structure, by increasing the network level and enabling each layer to cooperate, the complexity of a single network layer can be effectively reduced, thereby making the prediction results better.

(2) Increase the SGD optimizer. The main algorithm for neural network training is gradient descent, and the most common optimization method for gradient descent is to add an optimizer to the model. The optimizer selected in the experiment in this paper is the second-order convergence, fast convergence speed, and good optimization performance optimizer SGD. SGD (stochastic gradient descent) refers to microbatch gradient descent. The minibatch gradient value of each iteration is calculated, and then, the parameters are updated. Since the parameters are calculated and updated each iteration, each sample may contain a lot of noise. So, the calculated gradient noise is large, which will make the training process oscillate violently. However, it is precisely because of this oscillation that after the local optimization is achieved, the oscillation will

Table 3: Prediction result table.

Serial number	Academic credits	English language proficiency	Political civilization	Technological innovation	Stylistic arts	Social volunteering	Predict the direction of career development	Actual graduation destination	Consistent situation
001	1448	0	7.7958	0.9	2.42	0.3	Employment	Employment	Yes
002	1375	0.2	5.3765	0	0.3	0	Ascending	Ascending	Yes
003	1495	0.4	8.226	7.98	3.5	0.34	Employment	Employment	Yes
004	1703	0.2	6.9803	0	1.86	0	Ascending	Employment	No
005	1711	0.2	5.0884	0	0.5	0	Employment	Employment	Yes
006	1632	0.2	7.0121	7.42	0.3	0.15	Employment	Employment	Yes
007	1523	0.2	4.545	4.06	0.32	0	Ascending	Ascending	Yes
008	1378	0.2	6.0566	0	3.92	0	Employment	Employment	Yes
009	1477	0.4	4.9982	0.2	0.35	0	Employment	Not employed	No
010	1743	0.2	8.6781	4.86	2.9	0.3	Employment	Employment	Yes

Table 4: Individual prediction results of employment and entrepreneurship development direction.

Career development direction	Number of predicted samples	Actual number of samples	Single prediction accuracy (%)
Employment	411	391	94.9
Study	242	262	92.4
Go abroad	48	55	87.3
Freelance	29	34	85.3
Not employed	41	35	82.8
Undergraduate	11	5	52.1

enter the next better point, so the optimization effect is very good.

The Acc evaluation model and the loss function are used again to evaluate the prediction effect of the optimized model. Optimize the Acc value of the model. The Acc values of the test set and training set are both stable at around 0.835. Optimize the loss value of the model: the loss value of the test set is stable from close to 2.75 to around 0.35, and the loss value of the training set is stable from 23.8 to around 0.3. Compared with the basic model, the Acc value and loss value of the comprehensive optimization model are improved to a certain extent, so the optimization model is effective and the prediction effect is better.

4.3. Applications of Predictive Models. Import the existing student database into the prediction model and make predictions and compare and analyze the existing data samples according to the prediction results of the prediction model. There are a total of 835 pieces of student data, and 782 pieces of valid data are obtained after processing. Among them, some students' employment and entrepreneurship development direction prediction results are shown in Table 3.

After comparing all the prediction results with the actual employment situation of students, it is concluded that there are 663 correct data for the overall data sample prediction results, the overall prediction accuracy is 84.73%, and the error rate is 15.27%. The individual prediction data of various types of employment and entrepreneurship development directions are counted, and the individual prediction results are shown in Table 4. The accuracy rate of individual result prediction is calculated by the ratio of the correct predictions to the total number.

Based on the overall experimental data, the best one-way prediction effect of this prediction model is "employment", and "advanced education" ranks second. The one-way forecasting effect is the worst for "not graduated," followed by "not employed." In this regard, this paper makes the following analysis.

(1) Regarding the quality of the students, because the students are sampled from colleges and universities directly under the Ministry of Education of the People's Republic of China, which are world-class discipline construction, they are excellent in both personal quality and learning literacy, and their majors are currently popular for employment. So, it is reasonable for most students to find employment or further studies after graduation.

(2) Regarding the interference by families, the future employment and entrepreneurship development of college students is not only a matter of personal choice but also related to parents' wishes and family factors. A small number of students will follow the wishes of their parents or change their employment and entrepreneurship plans according to their own family conditions.

(3) The amount of data for individual forecast items is small. Since the algorithm used in this experiment is a convolutional neural network algorithm, the characteristic of CNN is that the larger the training set, the better the effect. In this experiment, for

example, there are only five people in "ungraded," which only accounts for 0.64% of the effective data volume. Therefore, one-way training does not work well.

(4) The prediction algorithm and model have not yet reached the ideal limit, and there is still room for optimization and improvement.

5. Conclusion

Based on the idea of convolutional neural network, this paper included 853 university students as research objects and their data from 2010 to 2018. We collected the comprehensive data and employment data of 853 students in the school for four years as data samples. We inputted six influencing factors, including academic performance, English proficiency, political civilization, technological innovation, sports and art, and social volunteer service, and set six categories of employment, including further education, going abroad, freelance entrepreneurship, unemployed, ungraduated, and employment and entrepreneurship development direction, built a prediction model for the employment and entrepreneurship development direction of college students, provided more scientific and effective decision-making basis for employment and entrepreneurship development direction for colleges and universities, and helped college students to correctly plan the employment and entrepreneurship development direction. The experimental results in this paper prove the validity of the prediction results, and to a certain extent, verify the user-friendly, modular, and easy-to-expand characteristics of the Keras framework interface. At the same time, it also proves that the sequential algorithm has convolutional properties in multilabel classification problems. This method has the advantages of high speed and high precision. The predicted student development direction can be further refined. The five types of college students' employment and entrepreneurship development directions set in this experiment include employment, further education, going abroad, freelance employment, and entrepreneurship. In future research, various development directions can be refined for more in-depth research. For example, it can predict the type of enterprise unit where students are employed, the reasons for the grades of schools where students study, and so on. Through further detailed research, the prediction function of this prediction model is increased, and the overall application degree of the model is improved.

Data Availability

The labeled datasets used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

References

[1] M. Wise and O. Christine, "Henderson Amanda the contribution of paid employment for students during their preregistration nursing studies: an integrative review," *Nurse Education Today*, vol. 111, pp. 102–110, 2022.

[2] G. A. Orona, Q. Li, P. C. Bartek, and D. au, "What predicts the use of interaction-oriented pedagogies? The role of self-efficacy, motivation, and employment stability," *Computers & Education*, vol. 184, no. 12, p. 104498, 2022.

[3] M. Casciato, "Post-heart transplant employment: rates, predictors, and interventions," *The Journal of Heart and Lung Transplantation*, vol. 41, no. 4, pp. S198–S199, 2022.

[4] J. E. Bates, A. Parekh, C. R. Goodman et al., "The geography of employment outcomes for radiation oncology graduates in 2019," *International Journal of Radiation Oncology, Biology, Physics*, vol. 45, pp. 78–96, 2020.

[5] M. Joanne, "Juggling employment and studies: nursing students' perceptions of the influence of paid employment on their success," *Nurse Education Today*, vol. 92, pp. 32–45, 2020.

[6] M. Sidebotham, C. Walters, K. Baird, and J. Gamble, "Simulated employment interviews: a collaborative approach to gaining understanding of the graduate midwife employment process," *Women and Birth*, vol. 33, no. 5, pp. 455–463, 2020.

[7] P. Jung and C. Smith, "A mismatch between training preferences and employment opportunities," *Lancet Global Health*, vol. 7, pp. 287–294, 2019.

[8] A. R. Sattler and M. K. Amatayakul, "Results from the 1989 member employment survey," *Journal of*, vol. 60, no. 11, pp. 3641–4118, 2018.

[9] M. Samuel, F. Adaba, and A. Maeda, "Home parenteral nutrition and employment in patients with intestinal failure: factors associated with return to employment," *Clinical Nutrition*, vol. 38, no. 3, pp. 1211–1214, 2019.

[10] A. Warner, J. Barrow, and J. A. Williams, "The relationship among BSN students' employment, educational, and health-related characteristics and semester grades: a multi-site study," *Journal of Professional Nursing*, vol. 36, no. 5, pp. 308–316, 2020.

[11] I. M. Geisner, J. Koopmann, P. Bamberger, and P. M. E. Wang, "When the party continues: impulsivity and the effect of employment on young adults' post-college alcohol use," *Addictive Behaviors*, vol. 77, pp. 114–120, 2018.

[12] U. Bejerholm and M. E. Larsson, "Suzanne Johanson Supported employment adapted for people with affective disorders—a randomized controlled trial," *Journal of Affective Disorders*, vol. 207, pp. 627–642, 2017.

[13] C. Dillahunt-Aspillaga, M. J. Pugh, B. A. Cotner et al., "Employment stability in veterans and service members with traumatic brain injury: a veterans administration traumatic brain injury model systems study," *Archives of Physical Medicine and Rehabilitation*, vol. 99, no. 2, pp. 940–943, 2018.

[14] T. Boonekamp and Z. Joost, "Guillaume Burghouwt Determinants of air travel demand: the role of low-cost carriers, ethnic links and aviation-dependent employment," *Transportation Research Part A*, vol. 112, pp. 257–265, 2018.

[15] B. Alcott, "Should degrowth embrace the job guarantee?" *Journal of Cleaner Production*, vol. 38, pp. 675–684, 2019.

[16] K. Siyan and N. Elena, "Does an alignment of employment policies and individual preferences affect intention to stay in the profession? Evidence from Canadian Midwives," *Health Policy*, vol. 125, no. 4, pp. 383–390, 2021.

[17] K. Hardcastle, M. A. Bellis, K. Hughes, and K. J. Garner, "Measuring the relationships between adverse childhood experiences and educational and employment success in England and Wales: findings from a retrospective study," *Public Health*, vol. 165, pp. 106–116, 2018.

[18] V. Costantini and F. Crespi, "Elena Paglialunga the employment impact of private and public actions for energy efficiency: evidence from European industries," *Energy Policy*, vol. 119, pp. 8864–8875, 2018.

[19] A. Whitworth, "The economic case for well-considered investment in health-related employment support: costs and savings of alternative modified Individual and Placement Support (IPS) models," *Disability and Health Journal*, vol. 11, no. 4, pp. 568–575, 2018.

[20] T. C. Clarke, "Hosanna Soler-Vila et al. Working with cancer: health and employment among cancer survivors," *Annals of Epidemiology*, vol. 25, no. 11, pp. 953–960, 2018.