Hindawi
Security and Communication Networks
Volume 2023, Article ID 9842350, 1 page
https://doi.org/10.1155/2023/9842350

Retraction

Retracted: Application and Analysis of Artificial Intelligence in College Students' Career Planning and Employment and Entrepreneurship Information Recommendation

Security and Communication Networks

Received 26 December 2023; Accepted 26 December 2023; Published 29 December 2023

This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret 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 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] H. Zhang and Z. Zheng, "Application and Analysis of Artificial Intelligence in College Students' Career Planning and Employment and Entrepreneurship Information Recommendation," *Security and Communication Networks*, vol. 2022, Article ID 8073232, 8 pages, 2022.

Hindawi
Security and Communication Networks
Volume 2022, Article ID 8073232, 8 pages
https://doi.org/10.1155/2022/8073232

Research Article

Application and Analysis of Artificial Intelligence in College Students' Career Planning and Employment and Entrepreneurship Information Recommendation

Hui Zhang[1] **and Zhuonan Zheng**[2]

[1]*Institute Office, Guangdong Industry Polytechnic, Guangzhou 510300, China*
[2]*Human Resources Division, Guangdong Industry Polytechnic, Guangzhou 510300, China*

Correspondence should be addressed to Hui Zhang; xb210@gdip.edu.cn

Received 13 July 2022; Revised 8 August 2022; Accepted 17 August 2022; Published 13 September 2022

Academic Editor: Hangjun Che

With the arrival of graduation season, the number of graduates is expanding every year, and the employment rate of college students has become one of the data that colleges and universities pay attention to. To improve the employment rate of college students, we should first educate each college student in career planning, so that they can clearly understand their own positioning and future development direction. Career planning can guide students to understand their jobs and analyze their professional fields. Faced with massive employment information, it is also a big problem for college students to search and choose information. In this paper, the personalized recommendation system for entrepreneurship is described, and the basic principles of information recommendation are described. The basic information and personal interest points of college students are represented by feature vectors, which provide a favorable theoretical support for college students' career planning and employment and entrepreneurship information recommendation. An information recommendation model under deep learning is formed. Finally, the performance of the model under the traditional algorithm and the optimized information recommendation model is evaluated, and the satisfaction of users to this system is scored so as to provide a convenient and quick information recommendation system for college students, thus indirectly improving the employment rate of graduates and providing corresponding solutions to the problem of difficult employment.

1. Introduction

In this era of rapid information development, the acquisition of resources is convenient and fast. College students' career planning is particularly important for their future development, which is a clear plan for their future. College students choose the learning resources and knowledge data they need to plan their future development on the Internet and make a preliminary design of themselves by using the algorithm recommended by the platform [1]. From the perspective of the Internet, this paper analyzes how college students should plan their careers and know themselves correctly from what aspects [2]. The teaching mode is to take online teaching data to reflect on offline teaching, stimulate college students' awareness of independent career development, set teaching content according to the law of students' growth process, and carry out teaching activities aiming at cultivating students' practical ability in the process of exploration [3]. According to the online recruitment information, this paper analyzes the feasibility of career planning of Chinese college students. Taking the major of human resource management as an example, this paper studies the determination of career development path, job quality requirements, and career planning stage of Chinese college students and uses dynamic network recruitment information to adopt the rolling planning method to plan college career [4]. Career planning education strengthens the ideological and political education of college students and enhances the effectiveness, affinity, and appeal of ideological and political education. Finally, it discusses the

countermeasures of this education to college students' career planning [5]. With the continuous expansion of e-commerce, the traditional recommendation system can no longer meet the needs of current data processing. Combined with the recommendation algorithm of big data, a personalized recommendation system of e-commerce platform is constructed [6]. Data collection and processing are carried out in distance education, and gesture recognition of virtual reality is used to recommend educational information in class [7]. On the social platform, the influence of users' comments on the surrounding environment and active screening and recommendation of information are the basic user activities and services of the social software [8]. In the recommendation of students' personalized problems in the field of education, this paper puts forward a recommendation algorithm of tacit knowledge points and verifies whether the algorithm is reliable [9]. As for the increasing information and suggestions in the investment market, the portfolio model is optimized by empirical analysis according to different fuzzy information [10]. While enhancing situational awareness, it also brings many challenges to the recommendation of battlefield situation information. In the sorting stage, the situation information in the candidate set is accurately scored and sorted, and finally, the situation information with higher scores is recommended to the commander [11]. In the collaborative filtering algorithm model, users can quickly collect personalized information of users with high accuracy, which can provide a quick way for users to retrieve information [12]. In the aspect of web page design and smart phone, the system of tourism information recommendation needs to aim at the real needs of users, carry out intelligent data screening, and provide the information they want according to their preferences [13]. Label labeling is also based on the recommendation algorithm of the system, which constructs a synonymous label set for collecting synonymous labels under the definition classification, which is the result of applying the cluster seepage method to the existing resources of users [14]. The development of Internet is also important for farmers to obtain information resources. Farmers can plant grains according to accurate agricultural information to meet people's needs [15]. When recommending information, there will be a lot of mixed, fuzzy, and cross information, which will be fused according to their similarity and recommended to users [16]. There are many incomplete domains in migration learning that will be used in information recommendation systems [17]. Analyze users' information access history records, extract their whereabouts, label them according to semantic means, and finally search users for information [18]. For the generation of massive data information in the bus card, a comfortable bus route can be recommended to passengers according to their needs. The bus data card can calculate the waiting time, congestion time, and travel time between different bus stops on different bus lines at different times [19]. In the mobile environment, the group system recommendation is carried out considering the preferences of group users, and the recommendation system can also be used for restaurant recommendation according to the preferences of users themselves [20]. On social software, the platform will also recommend people you may know according to your personal information and contacts and recommend friends among users [21]. In business activities, the personalized recommendation system also has an important application value and carries out personalized recommendation of mobile business methods [22]. Between the system and users, a system simulation model of personalized information recommendation is established, the effectiveness of the model and the sensitivity of main influencing parameters are analyzed, and the characteristics and mechanism of information recommendation between the system and users are revealed [23]. Users interact with tags. Based on the tensor decomposition method of the matrix model, especially the pyramid decomposition method, aiming at the high computational complexity of the TD model, a pairwise interactive tensor decomposition method is proposed to optimize it [24]. According to an abstract conceptual method, human preferences are recommended for new information. The recommended items are selected by using conceptual ideas, which is the user's impression of the items inferred by using label data of free classification [25].

2. Personalized Recommendation System

2.1. Brief Introduction of the Personalized Recommendation System. The personalized recommendation system has become an important tool to obtain information in this era of information crossing. It screens users' browsing records and personal information according to big data technology to predict products and information that users may like. This can greatly increase the consumption rate and click rate of customers. Personalized information recommendation needs three parts. The first step is to collect and process the information, analyze the information, and finally use the recommendation algorithm to recommend information to users. The process is shown in Figure 1.

2.2. Types of Information Recommendation. There are many kinds of information recommendation contents, such as entertainment, literature, and combination. Entertainment information recommendation mainly integrates information according to the praise rate and comment rate of entertainment videos that users often click on and establishes a user preference model to recommend videos to users, which also increases users' liking for apps. Literary information recommendation mainly analyzes information according to the news content and personal information that users usually watch and recommends knowledge information to users according to the analysis of news viewing content of different ages, which can accurately push the news that users want to know and the knowledge sources they want to learn. Combined information recommendation is complex, the information from different sources of users is analyzed and screened, and finally, information integration is carried out through the personalized recommendation algorithm to form different information recommendation models for each user. The information sources of combined

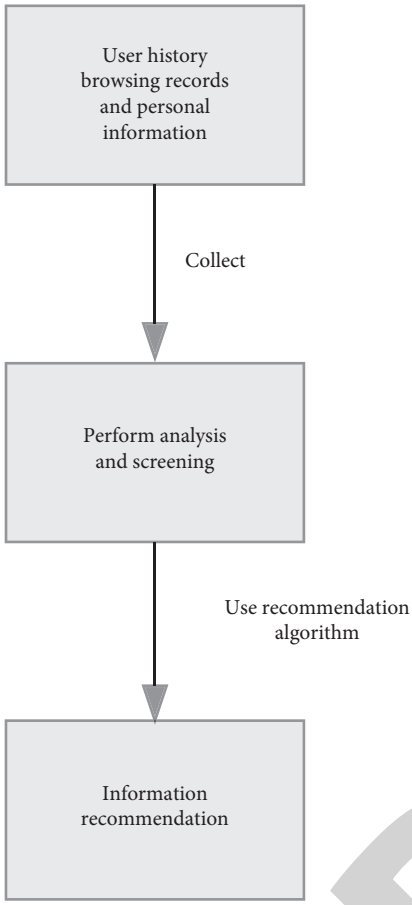

Figure 1: Information recommendation process.

information recommendation are more complex, and various algorithms are used to recommend so as to improve the accuracy of user preference information. The general flow of information recommendation content is shown in Figure 2.

3. Information Recommendation Algorithms

3.1. Employment Recommendation Algorithm for College Students. Collect and filter the user's information, the information content comes from different directions, and translate the information content into text information, that is, the content recommendation process is as follows.

Step 1. Transform the content. Each feature point of content is converted into vector points of different dimensions of the space vector, assuming that the text information after content conversion is i, x_i is content feature point, and y_i is weight. The expression for content i is

$$\mathbf{Content}(\mathbf{i}) = \{x_1 : y_1; x_2 : y_2; \ldots; x_i : y_i\}. \quad (1)$$

The feature points of the content are represented by vectors:

$$\mathbf{Content}(\mathbf{i}) = \{y_1, y_2, y_3, \ldots y_i\}. \quad (2)$$

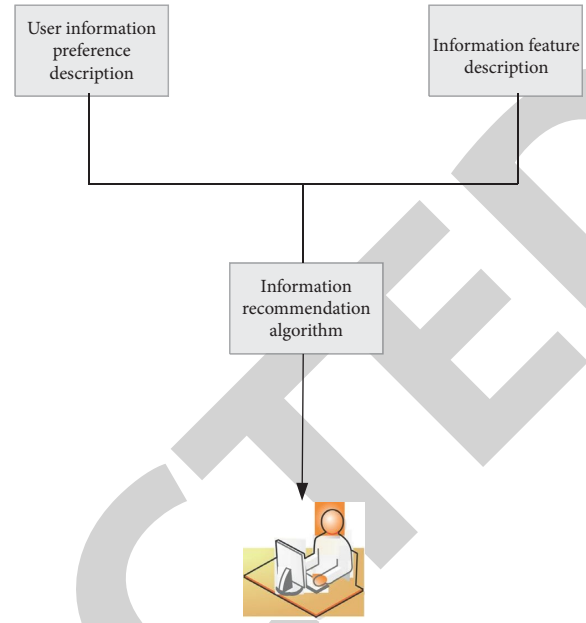

Figure 2: Information content recommendation process.

Step 2. N_w is the feature index, and the similarity relationship between content feature points is calculated. Then, different users have different preference models, and the expression is as follows:

$$W(w) = \frac{\sum_i N_w \text{content}(i)}{N_w}. \quad (3)$$

Calculate the similarity of each similarity point of the content:

$$\begin{aligned} \text{sim}(W, I) &= \cos(\overrightarrow{W}, \overrightarrow{I}) \\ &= \frac{\overrightarrow{W}, \overrightarrow{I}}{|\overrightarrow{W}| \times |\overrightarrow{I}|}. \end{aligned} \quad (4)$$

Step 3. Generate information recommendation results. The information with the highest similarity is integrated and recommended to users.

In order to realize the career planning and employment and entrepreneurship information recommendation of college students, the information distribution model is constructed. Collect personal information from universities and output data sequences of information characteristics:

$$x = \{x_1, x_2, x_3, \ldots, x_i\}. \quad (5)$$

Integrate the characteristic points of college students' personal information, that is, the expression of characteristic quantity is as follows:

$$m(x) = \frac{x_i}{\sum_{i=1}^{w} N_w \cdot y_i}. \quad (6)$$

The sampling model of characteristic points of college students' personal information:

$$m(k) = \frac{m(x)}{\sum_{i=1}^{w} y_i(n(k) \cdot y(\mathrm{k}))}. \tag{7}$$

In the information feature point sampling model, k is the amount of employment information and q is the employment intention index.

Personal information similarities of college students' employment intentions:

$$\mathrm{sim}(u_a, u_b) = \frac{\sum_{i \in I_a} m(x)m(k)}{\sqrt{\sum_{i \in I_a}\left(r_{u_a,i} - \overline{r_{u_a}}\right)^2 \cdot \sum_{i \in I_a}\left(r_{u_b,i} - \overline{r_{u_b}}\right)^2}}. \tag{8}$$

The similarity of information recommendation index between different college students is quantified by standard, and the formula is as follows:

$$\begin{aligned} E_{(i,j)} &= E_{(i)} + E_{(j)} \\ &= im(x) + jm(k^a), \\ &= \begin{cases} im(x) + jm\left(k^2\right), & k < k_0, \\ im(x) + jm\left(k^4\right), & k \geq k_0. \end{cases} \end{aligned} \tag{9}$$

Employment recommendation information is mainly matched according to the interest and hobbies of college students. By correlating the information of college students' interests and hobbies, the feature extraction model of college students' interest points is obtained:

$$\begin{aligned} y &= F(x) \\ &= \left(f_1(x), f_2(x), \ldots, f_m(x)\right). \end{aligned} \tag{10}$$

The distribution expression of the spatial set of information characteristics of college students' job allocation in different fields:

$$f(m) = \left\{f_k \middle| f_{ki} = 1, k = 1, 2, 3, \ldots, m\right\}. \tag{11}$$

According to the interest and hobbies of college students, information screening is carried out to establish ambiguity functions related to their interest:

$$\begin{aligned} Q &= \sum_{k=1}^{m} t_{ik}, t_{jk}, \\ n_i &= \begin{cases} 1, & i = j, \\ 0, & i \neq j. \end{cases} \end{aligned} \tag{12}$$

Construct the distribution model of college students' employment interest characteristics:

$$\begin{aligned} P(U|\alpha) &= \prod_{i=1}^{m} n_i(U_i|0, \alpha), \\ P(V|\alpha) &= \prod_{j=1}^{m} n_i\left(V_j|0, \alpha\right). \end{aligned} \tag{13}$$

3.2. Career Planning Algorithm for College Students. College students build their own career plans according to their majors and their hobbies and fuse the characteristic points of information to obtain an adaptive learning weight calculation formula:

$$\begin{aligned} W_k(U) &= \alpha\left(\frac{1}{m}\sum_{i=1}^{m}\frac{\sum r_{i,j}}{\sum r_k + \widehat{r_{i,j}}}\right), \\ W_k(V) &= \alpha\left(\frac{1}{n}\sum_{i=1}^{n}\frac{\sum r_{i,j}}{\sum r_k + \widehat{r_{i,j}}}\right). \end{aligned} \tag{14}$$

If all the interest points of college students are counted and made into their career planning book, their interest points meet the expression:

$$\max_{i,j,m,n} \sum_{\alpha \in r_i} \sum_{\alpha \in r_j} \sum_{\alpha \in r_m} \sum_{\alpha \in n} \alpha x_{i,j,m,n} V_n. \tag{15}$$

The self-adaptive function of dividing the group size of college students in different professional fields is as follows:

$$W_k = W_k(U)\left[1 - W_k(V)\right]^{k-1}. \tag{16}$$

The deep learning method is used to search the job requirements and interest feature points of universities, and the ambiguity function of the search is as follows:

$$E_{(k)} = \sum_{k=0}^{\infty} \left[1 - W(k)\right]^k. \tag{17}$$

Average number of time slots under the deep learning method:

$$\begin{aligned} T &= E_{(k)} n_i \\ &= \frac{L}{(1 - 1/n)^{m-1}}. \end{aligned} \tag{18}$$

Interest matching function under the deep learning method:

$$\begin{aligned} E^{cv}(c_1, c_2) &= u * \mathrm{length}(c) + v * \mathrm{area}(\mathrm{inside}(c)) \\ &+ \lambda_1 \int_{\mathrm{inside}(c)} \left|I - c_1\right|^2 + \lambda_2 \int_{\mathrm{outside}(c)} \left|I - c_2\right|^2. \end{aligned} \tag{19}$$

To sum up, the learning model of college students' career planning and employment information recommendation is

$$\begin{aligned} C &= \mathrm{Min}\{\max(C_i)\}, \\ \sum_{j=1}^{n} M_j &= 1, \quad \left(\forall_i \in (1, n), \forall_j \in (1, m)\right). \end{aligned} \tag{20}$$

Optimal matching iterative representation of college students' interest feature points under deep learning model:

$$x_i(k+1) = x_i(k) + \alpha\left(\frac{x_i(k) - x_j(k)}{\left\|x_i(k) - x_j(k)\right\|}\right). \tag{21}$$

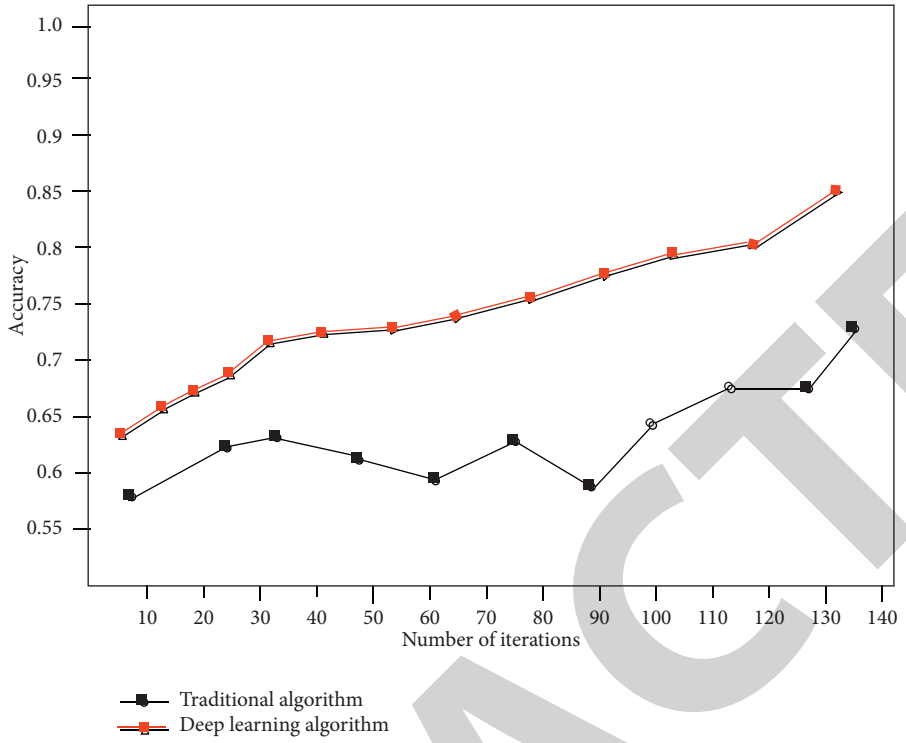

Figure 3: Comparison of interest matching accuracy.

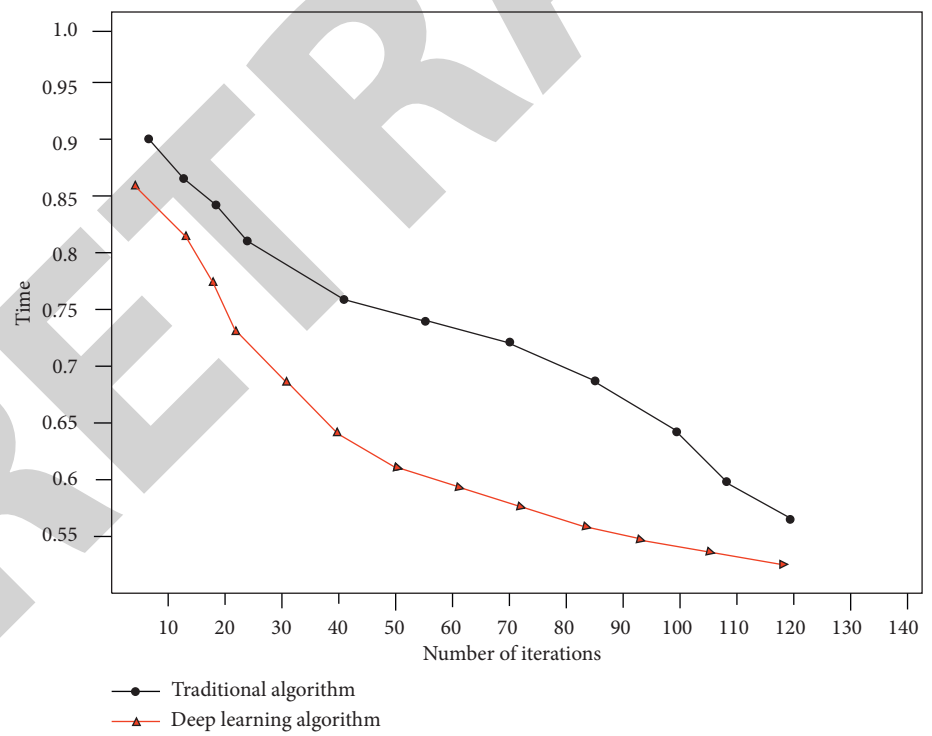

Figure 4: Time-cost comparison of models.

Table 1: Test module and method.

Test model	Method	Judgment criterion
Register/login	Perform multiple registration/login tests	Can you succeed?
Modify personal information	Submit after adding/modifying information	Is personal information in the database?
Online recommendation	Modify personal information viewing results	Can you update it in real time?
Satisfaction degree of recommended information	Satisfaction rating	Can you score?

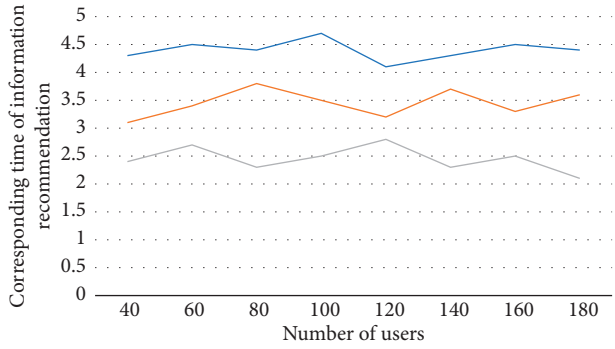

Figure 5: Relationship between corresponding time and node.

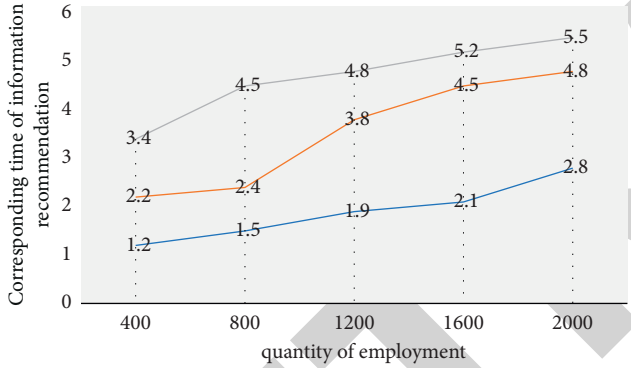

Figure 6: Relationship between corresponding time and employment quantity.

Finally, the satisfaction results of college students on career planning and employment information recommendation formed under the information analysis of big data:

$$F(M_j, i) = \tilde{w}_k^i * \alpha(M_j, i) + \tilde{w}_{k-1}^i * (1-\alpha)(M_j, i). \quad (22)$$

4. Experimental Analyses

4.1. Simulation Experiment. According to the employment data statistics of fresh graduates in 2022, the traditional algorithm model and deep learning algorithm are used to match the interest characteristics of college students, and their accuracy and time-cost calculated by the employment recommendation model are compared. As shown in Figures 3 and 4, the relevant parameters are set as follows: the feature scale dataset of user interest points is $Q = 500$, the fuzzy matching coefficients of interest points are $c_1 = 0.34$ and $c_2 = 0.32$, the distribution coefficient of personalized preference features is $c_r = 2$, the prediction coefficient of recommendation model is $\mu_1 = \mu_2 = 0.01$, and the total iteration times are 140.

Table 2: Information corresponding time of different nodes in the information recommendation algorithm model.

Number of nodes	Number of users							
	40	60	80	100	120	140	160	180
2	4.3	4.5	4.4	4.7	4.1	4.3	4.5	4.4
3	3.1	3.4	3.8	3.5	3.2	3.7	3.3	3.6
4	2.4	2.7	2.3	2.5	2.8	2.3	3.6	2.1

Table 3: Corresponding time of information with different employment quantities in the information recommendation algorithm model.

Number of users	Amount of employment information				
	400	800	1200	1600	2000
100	1.2	1.5	1.9	2.1	2.8
200	2.2	2.4	3.8	4.5	4.8
300	3.4	4.5	4.8	5.2	5.5

4.2. Functional Testing. This system is mainly aimed at college students' career planning customization and employment information recommendation services. The following is a test of the functions of each module for the employment information of college students to test whether these functions can be accurately realized and how the running results are. The statistical information is shown in Table 1.

4.3. Performance Testing. Excellent performance is necessary for any information recommendation system. If the performance of the system is too poor, users will have a bad experience, and users will also reduce the use of the recommendation system. Four nodes of the recommendation system are tested. The total number of employment information databases is about 2,000. The relationship between recommendation information response and the number of nodes and employment information is shown in Figures 5 and 6.

Statistics of time and cost information of recommendation information model is shown in Table 2.

The time-cost of recommendation information response and the number of employment information are counted as shown in Table 3.

4.4. Contrast Experiment. Information screening and fusion under big data analysis, in order to compare the information recommendation system under big data analysis in many

Table 4: Performance comparison of the artificial intelligence employment information recommendation model.

Model	Accuracy (%)	Recall (%)	F1 (%)	MAE (%)	ROC (%)
BP	98.99	89.97	78.25	10.87	87.63
Traditional algorithm	76.84	65.43	54.72	53.48	75.49

Table 5: Satisfaction score data table.

Scoring point	Model	
	Deep learning model (%)	Traditional model (%)
5 scoring points per capita	3.7	65.6
10 scoring points per capita	77.9	23.7
15 scoring points per capita	18.4	10.7

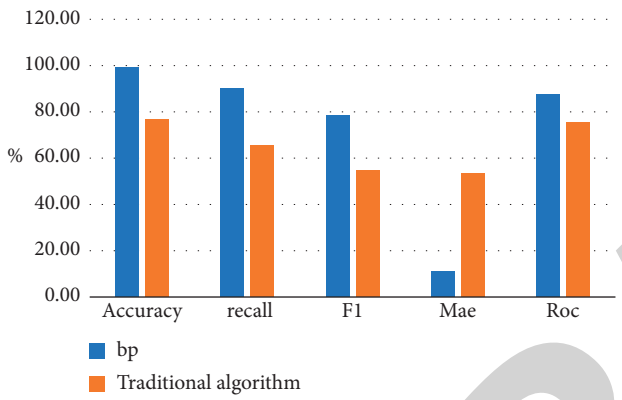

Figure 7: Performance comparison of the artificial intelligence employment information recommendation model.

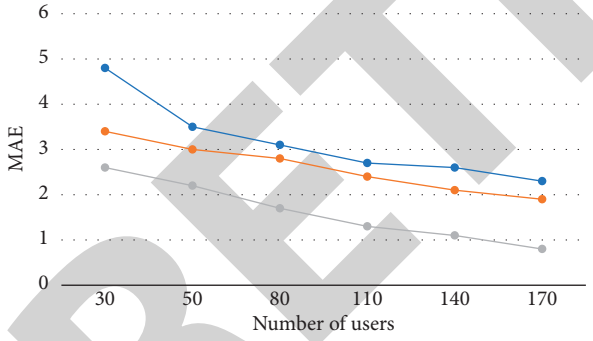

Figure 8: Linear relationship between number of users and MAE.

aspects, is employment information recommendation and career planning under artificial intelligence better? We make a comprehensive performance comparison of the employment information recommendation model, and the data are shown in Table 4 and Figure 7.

In order to intuitively see the applicability of the employment recommendation system to college students, we systematically score the per capita satisfaction of college students who have used the information recommendation system and compare the recommendation system using the algorithm model under deep learning with the traditional algorithm model, respectively. The experimental data are shown in Table 5.

Users carry out quality analysis and research on the information recommendation scoring points of the system and its evaluation standard MAE. The correlation between the per capita scoring points and MAE performance evaluation indicators is shown in Figure 8.

5. Conclusion

Our daily life is full of our personal information all the time, and the processing of data information is also the service action of our intelligent society for people's social activities. Using artificial intelligence technology, large-scale data such as college students' personal information, intended positions, and their own interest intentions are integrated and analyzed and finally provided to clients with corresponding needs and the same interest points. The research results of this paper are as follows:

(1) The starting point of employment and entrepreneurship information recommendation algorithm is to build the recommendation strategy algorithm model through the basic personal information and interest feature points of users

(2) Combined with the information recommendation model under deep learning, the information and users' needs can achieve an optimal matching mechanism, which greatly improves the accuracy of information recommendation and forms a good information retrieval experience for users

(3) Taking the corresponding time of the model as the performance evaluation index of the information recommendation system, the optimized algorithm model can improve the accuracy of information recommendation

(4) According to the user satisfaction score and the MAE value of the model, we can further see the feasibility of the information recommendation model for employment and entrepreneurship information recommendation and career planning

Data Availability

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

Conflicts of Interest

The authors declare that they have no conflicts of interest.

References

[1] L. Han, "Design of online learning resource recommendation platform based on college students' career planning," *International Journal of Social Science and Education Research*, vol. 5, no. 1, 2022.

[2] M. Tang, "Analysis of college students' career planning education from the perspective of Internet plus," *Advances in Vocational and Technical Education*, vol. 3, no. 2, 2021.

[3] P. Xu, "A probe into the construction of online and offline mixed courses of college students' career planning under the background of first-class curriculum construction," *International Journal of Social Science and Education Research*, vol. 4, no. 5, pp. 233–239, 2021.

[4] F. Cheng, "Study on career planning of Chinese college students based on online recruitment information," *Creative Education*, vol. 08, no. 15, pp. 2455–2462, 2017.

[5] Y. Z. Guo, "Study on the relative model of engineering enterprise career planning," *Key Engineering Materials*, vol. 693, pp. 1943–1947, 2016.

[6] Y. Wang, "Construction of E-commerce personalized information recommendation system in the era of big data," *Journal of Physics: Conference Series*, vol. 2074, no. 1, Article ID 012085, 2021.

[7] J. Wan, "Gesture recognition and information recommendation based on machine learning and virtual reality in distance education," *Journal of Intelligent and Fuzzy Systems*, vol. 40, no. 4, pp. 7509–7519, 2021.

[8] M. Lee and S. Oh, "An information recommendation technique based on influence and activeness of users in social networks," *Applied Sciences*, vol. 11, no. 6, p. 2530, 2021.

[9] L. Liu, "Learning information recommendation based on text vector model and support vector machine," *Journal of Intelligent and Fuzzy Systems*, vol. 40, no. 2, pp. 2445–2455, 2021.

[10] M. Bartkowiak and A. Rutkowska, "Vague expert information/recommendation in portfolio optimization-an empirical study," *Axioms*, vol. 9, no. 2, p. 38, 2020.

[11] C. Zhou, J. Shen, Y. Wang, and X. Guo, "Battlefield situation information recommendation based on recall-ranking," *Intelligent Automation & Soft Computing*, vol. 26, no. 4, pp. 1429–1440, 2020.

[12] Y. Qian, "Application of collaborative filtering algorithm in mathematical expressions of user personalized information recommendation," *International Journal of Computational Intelligence Systems*, vol. 12, no. 2, p. 1446, 2019.

[13] A. Sittisaman and N. Panawong, "A development of real-time tourism information recommendation system for smart phone using responsive web design, spatial and temporal ontology," *International Journal of Engineering and Advanced Technology*, vol. 8, no. 5, pp. 994–999, 2019.

[14] J. Wei and F. Meng, "Personalized information recommendation based on synonymy tag optimization," *Cluster Computing*, vol. 22, no. 3, pp. 5467–5478, 2019.

[15] H. Zhang, X. J. Qin, and H. G. Zheng, "TerminalsResearch and implementation of agricultural information recommendation system based on situational awareness," *IOP Conference Series: Materials Science and Engineering*, vol. 439, no. 3, Article ID 032116, 2018.

[16] Q. Zhao, C. Wang, P. Wang, M. Zhou, and C Jiang, "A novel method on information recommendation via hybrid similarity," *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 48, no. 3, pp. 448–459, 2018.

[17] M. He, J. Zhang, and J. Zhang, "MINDTL: m," *China Communications*, vol. 14, no. 11, pp. 218–236, 2017.

[18] J. Chen, X. Zhou, and Q. Jin, "Gradually adaptive recommendation based on semantic mapping of users′ interest correlations," *International Journal of Communication Systems*, vol. 29, no. 2, pp. 341–361, 2016.

[19] D. Guo, Z. Zhao, W. Xu et al., "How to find a comfortable bus route - towards personalized information recommendation services," *Data Science Journal*, vol. 14, no. 0, p. 14, 2015.

[20] H.-S. Park, M.-H. Park, and S.-B. Cho, "Mobile information recommendation using multi-criteria decision making with bayesian network," *International Journal of Information Technology and Decision Making*, vol. 14, no. 02, pp. 317–338, 2015.

[21] Z. Huang, J. Zhang, and B. Zhang, "Information recommendation between user groups in social networks," *Arabian Journal for Science and Engineering*, vol. 40, no. 5, pp. 1443–1453, 2015.

[22] Y. M. Wang, R. L. Wang, and D. X Xu, "Mobile E-commerce personalized information recommendation model," *Applied Mechanics and Materials*, vol. 687, pp. 2136–2139, 2014.

[23] H. F. Sun and F. Wang, "Study on the system simulation model of personalized information recommendation," *Advanced Materials Research*, vol. 1042, no. 1042-1042, pp. 239–242, 2014.

[24] H. F. Sun and X. D. Liu, "Optimization study of personalized information recommendation model based on tensor decomposition," *Advanced Materials Research*, vol. 1042, pp. 228–231, 2014.

[25] H. Yamaba, M. Tanoue, K. Takatsuka, N. Okazaki, and S. Tomita, "Representation of human preference using folksonomy and the idea called concept," *Artificial Life and Robotics*, vol. 19, no. 3, pp. 299–304, 2014.