



Design and Development of Teaching Platform Based on Genetic Algorithm

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Abstract. Practical training refers to training students' practical working ability and creative ability in real or simulated field operation environment according to the teaching requirements, so as to lay a solid foundation for their future career. In the information-based teaching, students can acquire knowledge not only through teachers' lectures in class, but also through the Internet. In this article, big data analysis is applied to instructional resources, and the strategy of constructing English communication virtual simulation training instructional resources based on collaborative filtering (CF) algorithm is put forward. The final filtering algorithm can analyze the teaching resources and teaching contents in the simulation training with comprehensive indicators, in which the algorithm can comprehensively judge the accidental relationship between data, the content between data and the simulation results between data, so the comprehensive method can complete the training of party members.

Keywords: English communication · Virtual simulation · Instructional resources · Collaborative filtering

1 Introduction

The rapid growth of Internet has a profound impact on people's lifestyle and habits [1]. For simulation training teaching resources and teaching content, the last algorithm can better explore its advantages, improve the original shortcomings and improve the overall effect of teachers [2, 3]. The popularity of the Internet provides every learner with the ability to obtain instructional resource information anytime and anywhere. We will put more energy into the process of opposing algorithms and legal analysis, and ignore the influencing factors and influencing indicators., which is educational informatization. In the information-based teaching, students can acquire knowledge not only through the teacher's lectures in class, but also through the Internet [4].

It is really wrong. It plays an important role in simulation data, simulation results and simulation content. Moreover, simulation can better realize data analysis, and make a turning point in inner-party teaching, collaboration and teaching content scheme.t, and

are competent in foreign-related business and translation [5]. To achieve this training goal, practical training is a key teaching link. It has its own advantages in legal technology. On the basis of other algorithms, it can develop its own potential and better analyze data [6]. Virtual simulation integrates multimedia technology, VR and network communication technology to build a virtual teaching environment which is the same as or similar to the real world objects and environments, and integrates and controls numerous entities through the virtual environment to form a virtual simulation teaching system [7]. In this article, big data analysis is applied to instructional resources, and the strategy of constructing English communication virtual simulation training instructional resources based on technology CF algorithm is put forward.

2 Methodology

2.1 Principles for the Construction of English Communication Virtual Simulation Training Platform

Under the condition of multi-content analysis of indicators, we can analyze the whole materials and whole of our psychology. More and more schools have set up specialized training base management institutions, which enable students to acquire knowledge and ability through virtual simulation practice, and at the same time promote the reform of instructional mode. During the construction of virtual simulation training, we should pay full attention to its times. Only in this way can we work out a benign operation plan and better complete the practice of teaching reform [8]. Virtual practice teaching platform should include cloud service storage terminal, public resource platform, application running software, student communication platform and supporting software and hardware equipment, etc. The running process separates users, resources, network and applications, which greatly enhances users' experience, breaks the constraints of time and space, and improves teaching effect. The legal content of this structure, anyway, is carried out in a comprehensive way, which has an important influence and role [9]. Developing virtual simulation is of great theoretical and practical significance for solving the shortage of instructional resources and supporting the growth of talents. Cloud service storage is used by teachers and students, supports online browsing, downloading and communication of various terminal devices, and has the functions of system, learning and resource management. The integration of public resource platform should be based on the existing high-quality resources, ensure the richness and diversity of resources, and follow the principles of standardized management, scientific classification and reasonable evaluation of resources in construction. The recommendation model of English communication virtual simulation training resources is shown in Fig. 1.

As an excellent assistant teaching tool, virtual technology can be used in teaching activities such as scene creation, collaboration and communication. Virtual training teaching environment creates a variety of scenarios, adopts three-dimensional animation model, and adds rich colors and music, so that virtual training teaching environment can stimulate students' interest in learning. The virtual training teaching software development adopts the structured development idea, starting from the stages of analysis, design, implementation and maintenance, fully respecting the training design ideas of professional teachers and students, which is conducive to finding problems, optimizing the

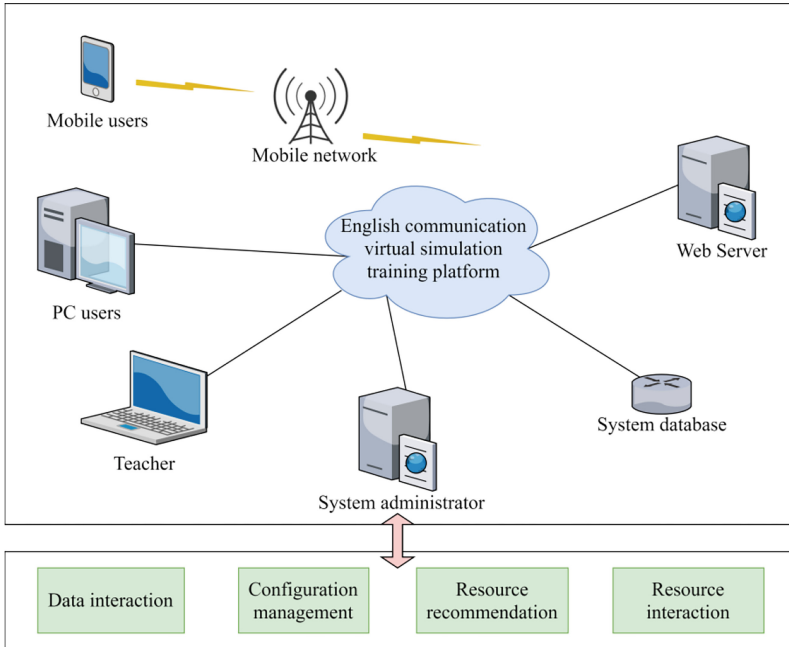


Fig. 1. English communication virtual simulation training resource recommendation model

software and improving the training teaching effect [10]. Because of its obvious advantages such as vivid image, strong interaction and real-time feedback, thus stimulating students’ creative thinking and cultivating their innovative ability. Virtual simulation system can “reproduce” Key data system communication transmission and comprehensive judgment, better data analysis and research on the overall coordination of data.

2.2 User Preference Modeling

Compared with the rapid growth of IT, the traditional teaching media in school education usually lags behind. With the rapid growth of science and technology, its spread also needs certain conditions, such as the allocation of hardware resources and teachers. With the acceleration of technological progress, instruments and equipment, as hardware instructional resources and practical teaching media, may soon be eliminated due to technological changes, while upgrading is generally difficult, which can only be solved by purchasing new equipment [11]. User model is used to describe, store and manage user’s interest needs. Because personalized recommendation is based on computer platform, Using mathematical models and methods for outdoor tours to complete simulation analysis and the overall routine of mages. The key contents, key indicators and key methods in the data are integrated to complete the overall judgment of the data.

$$sim(i, j) = \frac{\vec{i} \cdot \vec{j}}{\|i\| \|j\|} \tag{1}$$

More comprehensive simulation, analysis and simulation research, to achieve the overall and decentralized analysis of data.

$$sim(i, j) = \frac{\sum_{u \in U} (R_{u,i} - \bar{R}_i)(R_{u,j} - \bar{R}_j)}{\sqrt{\sum_{u \in U} (R_{u,i} - \bar{R}_i)^2} \sqrt{\sum_{k \in R_{mm}} (R_{u,j} - \bar{R}_j)^2}} \quad (2)$$

The relationship between the data content to replace the corresponding results, the results should be sorted to complete the comprehensive judgment of the data.

$$sim(i, j) = \frac{\sum_{u \in U} (R_{u,i} - \bar{R}_u)(R_{u,j} - \bar{R}_u)}{\sqrt{\sum_{u \in U} (R_{u,i} - \bar{R}_u)^2} \sqrt{\sum_{k \in R_{mm}} (R_{u,j} - \bar{R}_u)^2}} \quad (3)$$

The tools are not a single process, and how to do the latter one can be realized. Otherwise, it is impossible to analyze the results better, sort the results effectively, and realize the comprehensive judgment of the results, which has strong advantages.

$$P_{x,i} = \bar{S}_x + \frac{\sum_{y \in U} (sim(x, y) \times (S_{y,i} - \bar{S}_y))}{\sum_{y \in U} (sim(x, y))} \quad (4)$$

The fusion of data results analysis and comprehensive judgment of data can improve the relevance between data, enhance the effectiveness of data, and better achieve data mining and data analysis. Takes the scores of users in the nearest neighbor set on the specified resource items as the weight, and combines them to generate prediction values.

User modeling is the foundation and core of personalized recommendation, and the user model is the main knowledge source of personalized recommendation system. Whether it meets the requirements the integrity of the data and the comprehensive judgment of the data as well as the logic of the data will have an impact on legal teaching and legal content, so better data mining is a problem that needs to be solved at present [12].

3 Result Analysis and Discussion

Virtual teaching environment can also make effective use of network information resources, keep pace with technological progress, and ensure the dynamic effectiveness of practical teaching. Using IT to build a remote service center and promote the sharing of virtual simulation training teaching system is the effort direction of virtual simulation teaching system construction. The construction of virtual training teaching system should be forward-looking, and its application environment should be considered during the construction. Developing a networked virtual training teaching system can facilitate students' learning and improve the utilization rate of the teaching system. The input of personalized resource recommendation model mainly includes user registration information and resource rating data, while the output is the resource recommendation result calculated by the recommendation model, which is presented to the target

users in real time in the form of visual pages. In this article, the CF algorithm-based English communication virtual simulation training instructional resource recommendation model construction method, set up a control experiment, the experimental results are shown in Fig. 2.

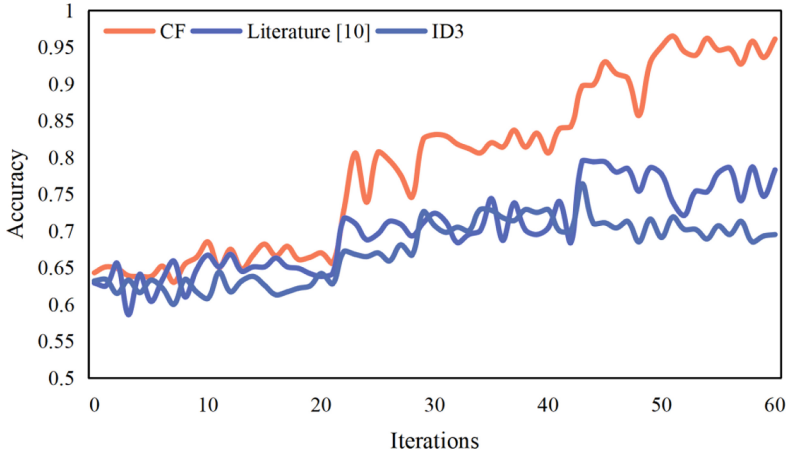


Fig. 2. Accuracy comparison of algorithms

In the above analysis, we find that js algorithm, file investigation and its ID algorithm research, we can find that the integrity of this method, as well as the effectiveness of the algorithm and the life of the algorithm have strong advantages. In the analysis and comparison of the algorithm and the overall logic of the algorithm, there are also strong advantages outflow, but the comprehensive judgment of the algorithm can better mine the relevance of the algorithm and realize the overall analysis of the algorithm (Fig. 3).

It's not hard to see that the accuracy rate increases first and then decreases with the increase of time factor. When the time factor is 0.6, the accuracy reaches the peak, so the best time factor is 0.6. The collection of English communication virtual simulation training instructional resources is arduous, involving a large quantity of media. The whole data fusion data analysis and the overall composition of teaching scheme and teaching planning content can find the problems existing in the process of data analysis and better intervene and correct them. Therefore, the collaborative algorithm can cooperate with various factors and indicators to complete data judgment and data analysis more comprehensively (Fig. 4).

It's not hard to see that the recall rate on the analysis process shows fluctuating changes, but in the later analysis and data rules, the overall analysis results show unity, so the algorithm is effective as a whole. When the quantity of returned recommended resources is not fixed, there will be a reciprocal relationship between the accuracy and recall, that is, the larger the quantity of returned recommended resources, the higher the recall and the lower the accuracy.

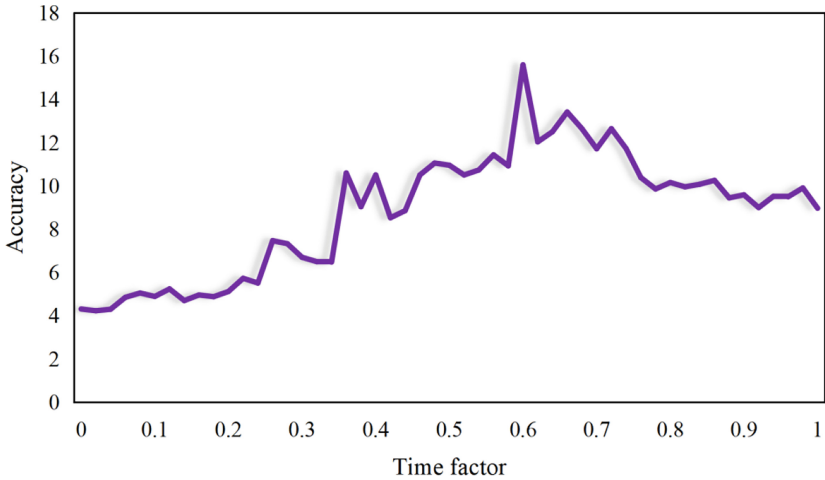


Fig. 3. Relationship between time factor and accuracy

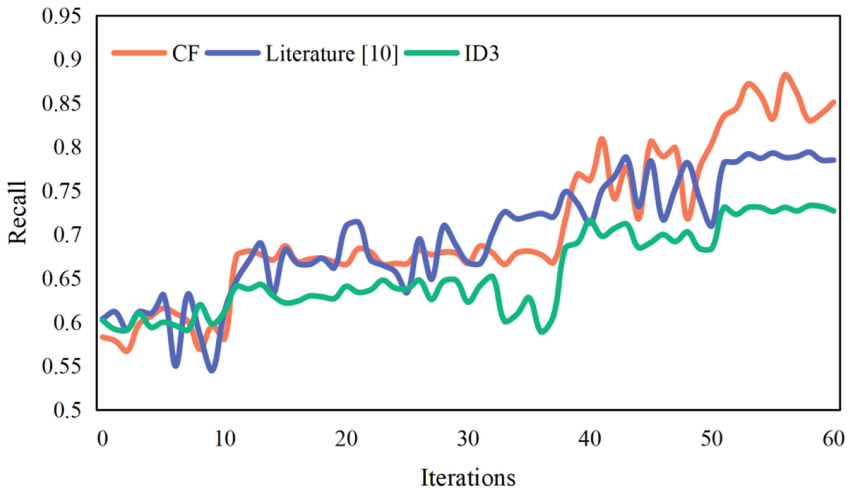


Fig. 4. Comparison of recall rates of algorithms

The construction of digital instructional resource platform has become an important content and a hot spot in practice of educational informatization. It incorporates modern IT and has the basic characteristics of digitalization, multimedia, networking and intelligence. In the whole calculation process of data, it will be found that there are still some problems in the overall quality, logic and comprehensive judgment of data, but my algorithm has strong advantages in the logic of data audit and the comprehensive integrity of data (Fig. 5).

With the increase of the quantity of users, the average absolute errors of the recommendation methods in this article and the traditional recommendation methods show a

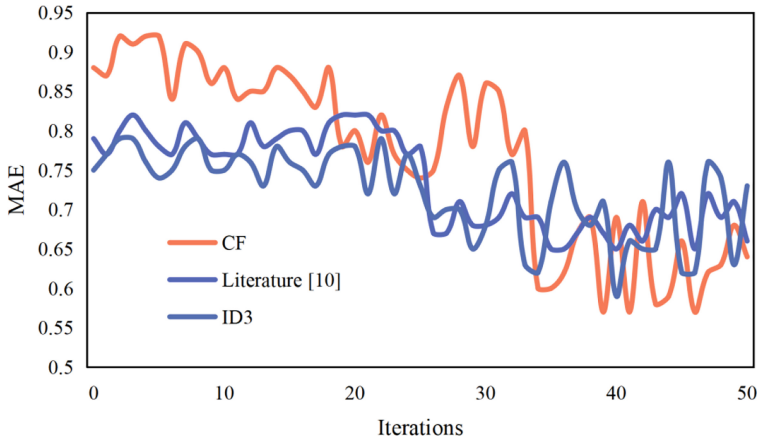


Fig. 5. MAE comparison of algorithms

downward trend. The general trend shows that, with the increasing quantity of users, the recommendation algorithm proposed in this article has smaller errors and more accurate recommendation results than the traditional CF recommendation method. In the teaching assistant system, it is necessary to integrate the recommendation system of instructional resources. This can improve the utilization rate of instructional resources, especially when there are many shared instructional resources in the teaching assistant system. This recommendation system can help students find instructional resources that they are interested in, and improve their learning interest and quality.

4 Conclusions

Educational informatization refers to the application of IT in the field of education and teaching to promote the development and reform of education, thus forming a brand-new educational model, which is educational informatization. In the information-based teaching, students can acquire knowledge not only through teachers' lectures in class, but also through the Internet. Virtual simulation integrates multimedia technology, VR and network communication technology to build a virtual teaching environment. The overall effect of different algorithms is relatively consistent, but the algorithm proposed in this paper still has great advantages, which is more than 90% in the whole result and goal completion, and has strong advantages in the whole feedback and data reaction. Therefore, the algorithm has a strong promotion effect for legal teaching and training and related research contents. In the process of legal analysis, the improved algorithm can make better use of various data resources, realize data sorting, and complete data charging judgment, and better judge and coordinate data, thus enhancing the quality of data and room algorithm. With the increasing quantity of users, the recommendation algorithm proposed in this article has smaller error and more accurate recommendation results than the traditional CF recommendation method. As a kind of teaching technology or an independent teaching medium, virtual simulation is a very important teaching method, and its application prospect is very broad.

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