



Research on the Application of User Interest Model and Apriori Algorithm in College Students' Education Recommendation

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Abstract. In order to realize the intelligent recommendation and interest matching of College Students' employment, a college students' employment recommendation model based on user interest model and Apriori algorithm is proposed. This paper constructs the user interest information collection and big data distribution model of College Students' employment, uses the big data association information mining method to match the interest features of College Students' employment, and constructs the interest correlation feature quantity of College Students' Employment under the control of association rules, so as to optimize and fuse the interest feature big data of College Students' employment recommendation. Apriori algorithm is used to adaptively match the interest feature points of College Students' employment recommendation, and fuzzy adaptive optimization method is used to optimize the recommendation of College Students' employment behavior. The simulation results show that the reliability of this method is good, and the employment satisfaction level of college students is improved.

Keywords: User interest model · Apriori algorithm · College students employment recommendation · Big data optimization fusion processing · Feature point matching · Adaptive matching

1 Introduction

With the continuous expansion of the scale of education and the transformation of social economy, the employment pressure of college students is also increasing. It is necessary to build an optimized recommendation model of College Students' employment, combine with the interests of college students to actively recommend, and provide employment guidance for college students [1]. According to the needs of Minwei, the automatic matching of College Students' employment Minwei is carried out, so as to improve the satisfaction level of College Students' employment. Research on the employment recommendation model of college students, combined with the big data statistical analysis method to optimize the employment recommendation of college students, promotes the increase of employment of graduates, and the related research on the employment recommendation model of college students has received great attention.

2 User Interest Sampling and Interest Feature Matching for College Students' Employment

2.1 User Interest Characteristics Sampling of College Students' Employment

In order to realize the employment recommendation of college students, we first build the user interest information collection and big data distribution model of College Students' employment [2]. This paper establishes a big data model for the distribution of user's personalized interests and hobbies in college students' employment recommendation, and uses the association rule scheduling method to match the interest feature points in the process of College Students' employment recommendation. The user interest information of College Students' employment is sampled, and the user interest information fusion characteristic quantity $p(x)$ of personalized recommendation of College Students' employment is obtained:

$$p(x) = x_m / \sum_{i=1}^n I_i \cdot u_m \quad (1)$$

Where u_m is the interest characteristic index of college students.

Based on this, the feature sampling model of user interest distribution of college students is constructed:

$$P \left(k = \frac{p(x)}{\sum_{i=1}^n I_i(l(k) \cdot q(k))} \right) \quad (2)$$

Where: k is the interest parameter; i is the amount of interest employment information; l is the employment project index; q is the employment intention index.

According to the above analysis, using the method of fuzzy association rules mining, this paper constructs the big data evolutionary game model of personalized recommendation for college students' employment, realizes the user interest feature sampling of College Students' employment, and carries out employment recommendation and pattern recognition according to the feature sampling results.

3 User Modeling Based on Ontology and Concept Frequent Interest Cluster

Behavior record module. It is mainly responsible for collecting the behavior log files formed by users' browsing of page links, clicking and downloading of resources, feedback information and other behaviors, forming the user interest range of comparative entities, which is used for query and reasoning operation of resource ontology. For user interest model, user interest represented by behavior record is the basis of all work.

Resource ontology module. It is mainly used for the description function of resources. The content of each resource is represented by the combination of some concepts of resource ontology. The resource ontology module is the core of the whole system. When

behavior records are transformed into concept interest strings, and potential user interests are mined through behavior records, resource ontology should be used for query and reasoning [3].

Interest mining module. It uses the improved Apriori algorithm to form a non redundant and non repetitive concept frequent interest cluster which can represent the user's long-term interest direction. It also uses SPARQL ontology query language and mining algorithm to dig out the user's potential interest from the concept interest cluster, Improve the accuracy of user interest model and get rid of the bottleneck of user resource recommendation.

User interest model module. The concept frequent interest cluster and potential instant interest are combined to form the final user interest model.

The four modules are in the process of linear link. The behavior record module is the input part of the whole system. The resource ontology module receives the behavior record set to query the resource RDF documents involved in the behavior record set, and forms the user's concept interest string set as the input part of the interest mining module. When the update cycle arrives, the interest mining module will process the input information with Apriori algorithm, mine the potential interest, form the concept of user interest, frequent interest clusters and potential instant interest clusters, and input them to the user interest model module. In the user interest model module, according to the update algorithm, the frequent interest clusters and the potential instant interest clusters are combined to form the final user interest model as the output of the whole system.

4 Simulation Experiment and Result Analysis

The statistical analysis software Excel2007 and spss19.0 are used to analyze the statistical data of College Students' employment recommendation model. Combined with MATLAB simulation tool, college students' employment recommendation is carried out. According to the above simulation environment and parameter setting, the simulation of College Students' employment recommendation is carried out to test the accuracy of the recommendation, and compared with the traditional SVM algorithm and BP algorithm. The comparison results are shown in Fig. 1 [4].

The analysis of Fig. 1 shows that the accuracy of this method for college students' employment recommendation is high, which improves the ability of interest feature matching of College Students' employment, and thus improves the level of satisfaction of College Students' employment.

5 User Interest Model Module

The updating of user model is a periodic process, and the updated data information is the real-time interest model formed by the user's behavior records. To a certain period of time, the incremental user concept frequent interest cluster is formed by Apriori algorithm, which is fused with the weight of the original user long-term interest model concept frequent interest cluster.

User's interest has a certain time, with the passage of time cycle, some interest may decrease, but some interest will increase. The increased interest will be reflected in the

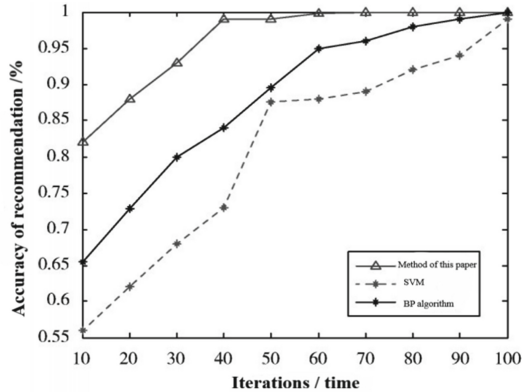


Fig. 1. Accuracy test of College Students’ employment recommendation

incremental model of user interest. For the decrease of user interest, we introduce an attenuation factor T , which makes the user’s long-term interest model attenuate according to the attenuation factor t to describe the process of user interest decrease.

With the continuous updating of long-term user interest model, some interests will be attenuated to a great extent when they cannot be updated for a long time, which indicates that users lose interest in frequent interest clusters of this concept. Therefore, we give a minimum attention threshold $confisin$. When the attention of frequent interest clusters of a concept is lower than this threshold, $confisin$ can be used to calculate the interest of frequent interest clusters of this concept, It will be eliminated directly from the user’s long-term interest model.

The abscissa interestnum of the experiment represents the number of interesting topics involved in user behavior. When the number of topics involved in user behavior records is more, the probability of users having potential interest is greater, and the precision of resources recommended by user model is improved. However, in general, the precision is slightly lower than that of frequent set clustering user model, because the more interests are involved, The larger the base of potential interest, the lower the precision.

6 Conclusion

Research on the employment recommendation model of college students, combined with big data statistical analysis method to optimize the employment recommendation of college students, promote the increase of employment of graduates. This paper proposes an employment recommendation model for college students based on user interest model and Apriori algorithm. Association rules scheduling method is used to match interest feature points in the process of College Students’ employment recommendation, and adaptive matching is carried out for jobs in different fields and college students’ interests. The spatial fuzzy clustering model is established, the preference distribution model of College Students’ employment recommendation is constructed by using the method of preference information mining and interest alignment, and the Apriori algorithm is

used for the adaptive matching of interest feature points of College Students' employment recommendation to realize the optimization of employment recommendation. The test results show that the accuracy of this method for college students' employment recommendation is higher, the interest matching ability is better, and the reliability level of employment recommendation is improved.

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