Design and Application of Modern Big Data Technology in College Entrance Examination

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Abstract. In recent years, with the implementation of new reform of the college entrance examination policy, and the rapid development of computer information technology, the college entrance examination application has become a hot topic, especially in the parallel college application process, which the candidates should fill in the application form according to their own scores and the lowest score of universities and colleges. At present, the most commonly used method is to make use of big data to effectively analyze the influencing factors and improve the admission probability, and to provide more scientific and convenient choices for the majority of candidates. It can be seen that big data analysis plays a vital role in the proposing process. This thesis introduces the steps and methods of big data processing, to collect, study and analyze data by data mining technology and database technology, providing reference information and data support for college entrance examination application.

Keywords: College entrance examination · Application system · Database · Big data technology · Design and application

1 Introduction

The college entrance examination is an important link in every Chinese student's learning career. The college entrance examination directly determines whether a student can enter an ideal university or not. How to optimize the college entrance examination volunteer application through analyzing the college examination and enrollment information over the years is the most worrying problem for every student and their parents in the college application process. The college entrance examination data and the historical enrollment data are complex, which makes it difficult for students and their parents to analyze the data effectively. The design and application of big data technology in college entrance examination college application is based on the application mechanism, annual college entrance examination scores database, professional scores, score query and other information, providing users with reference for college application scheme, so that students can be admitted by the school they choose.

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2 The Main Difficulties Existing in the College Entrance Examination Voluntary Application

The college entrance examination is the final test before the candidates enter the university, which determines the students' future career development [1]. When choosing a major, students should comprehensively consider the industry development, professional characteristics and evaluation changes of career development of each major in the next few years. Therefore, the choice of college entrance examination application is complicated, and there are risks, it is necessary to make self-planning, and at the same time to consider the interest and needs of the major, which also increases the risk of college entrance examination application to a certain extent. There are mainly the following phenomena: (1) the traditional way is inefficient, the choice of college entrance examination is difficult. Because there are too many factors affecting the college entrance examination, time-consuming and laborious, easy to make mistakes. (2) The program is unscientific. A sample survey of 100,000 participants conducted by the Social Research Center of China Youth Daily shows that more than 71.2% of them regret taking the college entrance examination. We can see many typical cases on the media or the Internet of the college entrance examination filling in the college entrance examination, among which there are some top students, and many people silently bear the pain caused by the error in the college entrance examination. (3) The phenomenon of blindly following the trend is serious. Under the temptation of huge user demand and high profits, the auxiliary system software market of college entrance examination is hot in recent years. Some merchants take advantage of customer anxiety and misunderstanding of market information to provide purposeful guidance.

3 Analysis of the Causes of the College Entrance Examination Voluntary Application Problem

The problem of college entrance examination voluntary application has aroused people's attention. There are five main reasons for the in-depth analysis of the problem: first, the college entrance examination volunteer has not received due attention, many people think that the college entrance examination is too difficult, it is good to pass the exam, did not consider the voluntary filling things. Most students start to plan for the application after getting the results; second, most students have no experience in the application, more than 90% of the students for the first time; third, lack of rational analysis, their career positioning, and professional enrollment conditions and rules of universities, blind filling in the admission school or professional dissatisfaction. Fourth, there is no standardization of the college entrance examination voluntary filling consultation and information service providers. The college entrance examination voluntary filling auxiliary system is an emerging industry, but there is no relevant laws and regulations management, the market is mixed, we need to establish industry standards, raise the entry threshold, increase the punishment for violations, and protect the legitimate rights and interests of candidates. Fifth, the number of provincial and municipal admission departments and college enrollment staff is very limited, these experts or staff have a large workload during the enrollment period, unable to provide one-to-one professional

guidance for a large number of candidates. Under the current policy, usually only in the local recruitment consultation meeting or with the telephone of the college admission office.

4 Benefits of the Design and Application of Big Data Technology in the College Entrance Examination Voluntary Application

With the development of information technology, big data technology is becoming more and more widely used. Big data is a good tool to understand objective laws and help people make scientific choices. The benefits of applying big data technology in the voluntary application of the college entrance examination are becoming more and more obvious. In the face of policy changes, many parents gradually begin to adapt to and rely on big data technology. In this context, the design and application of big data technology in the college entrance examination voluntary application has a broad development prospect. It mainly has the following benefits: (1) massive data samples: the wide application of information technology in various fields of society makes the amount of data grow rapidly in a short period of time, universities distinguish admission scores over the years according to different majors, and publish on the official website of the university to create favorable conditions [2] for the use of big data technology [2]. Due to the large sampling amount of data, the comparative data can analyze the relative characteristics of different universities and the risks of admission to majors, so as to reduce the risk in the process of filling in the college entrance examination. (2) Personalized scheme: Students' professional abilities and choices are different. When filling in the college entrance examination, the professional requirements of different universities based on big data technology, and the optimization scheme [3] can be proposed according to the ability characteristics of students. In addition, according to the development plan of each school and other data changes, the college entrance examination voluntary application system based on big data technology can be improved to provide more choices, to avoid the risk of problems caused by a single scheme. (3) Multi-element collaborative analysis: The main advantage of big data technology is that it can extract data from massive data samples, find the relationship between data and build data models, and comprehensively analyze the basic school situation, professional development, employment rate and other data [4]. And through the college entrance examination filling risk early warning, real-time and dynamic comprehensive monitoring of college entrance examination related events, strengthen the scientificity and rationality of college entrance examination filling.

5 Design and Application of Big Data Technology in the College Entrance Examination Voluntary Application

5.1 Module Design of Intelligent Auxiliary System for College Entrance Examination Volunteer

The intelligent auxiliary system of college entrance examination volunteer uses big data to conduct multi-directional system analysis, and provide personalized college entrance examination volunteer consultation program for examinees. According to the results and

volunteer intention, combining the big data analysis of relevant colleges and universities in the past five years, the customized voluntary filling program will help candidates enter the ideal universities and majors according to their scores. And dynamically grasp the relevant latest college entrance examination dynamics, college entrance examination information, build a website, mobile applications, wechat public account, etc., to achieve a full range of services. The intelligent auxiliary system of college entrance examination volunteer collects the admission plans and scores of colleges and universities in the past five years, and establishes a large database according to the enrollment plan, enrollment rate and other indicators, to understand the main trends of colleges and majors. Intelligent guidance and multiple data analysis avoid complex query and comparison, minimize the information difference of candidates, and use reasonable and personalized service consultation, make candidates feel comfortable and safe, and try our best to make candidates satisfied. The main module design is shown in Fig. 1.

University data mainly includes: college admission scores and the number of applicants over the years; In addition to the popular major scores divided by each university, it also includes the introduction and ranking of each college to provide comprehensive information for parents and students. Professional data can be divided into the following themes, namely: the subjects corresponding to the provincial examination scores of universities, the disciplines of college admission scores over the years, the subjects of college admission scores of popular majors, the introduction of each college and college ranking. The theme of the college entrance examination scores over the past years is concentrated on the college entrance examination scores of the past three years, matching the scores of the provincial colleges and universities; the main admission scores of the popular majors, convenient for candidates to query the admission scores of college majors last year. The theme of each college introduction is mainly the national college

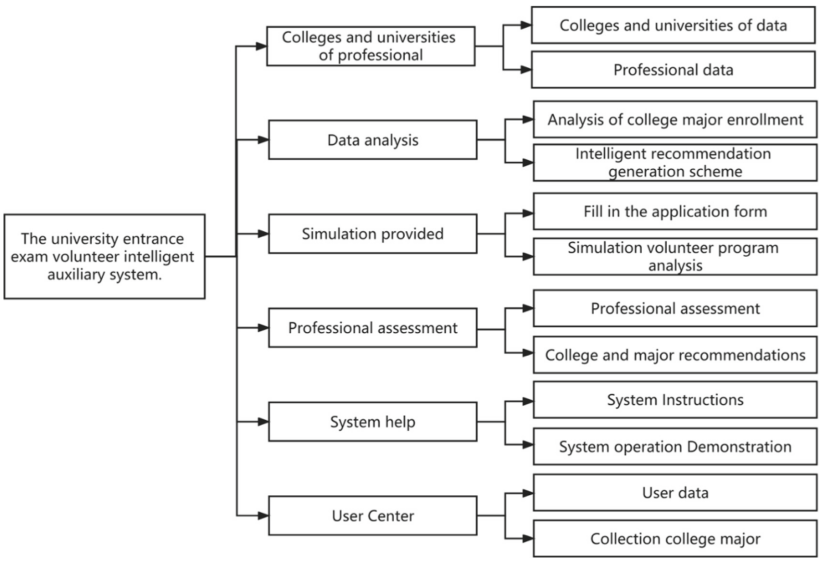

Fig. 1. College entrance examination voluntary intelligent auxiliary system

profile, which is convenient for candidates and parents to check the college profile information. The theme of college ranking focuses on the national college ranking, which is convenient for candidates and their parents to check the university ranking information.

5.2 Intelligent Recommendation Application of Big Data Student Voluntary Filling System

The intelligent recommendation application of the big data student voluntary filling system is based on the change of the college entrance examination scores. The mean data can effectively reduce the misjudgment of the scores due to students' subjective factors and avoid going beyond the normal dynamic range of the data. By testing multiple students at the same level and ignoring the extrinsic motivation factor factor, the predicted value and the actual value may be very close to the [4]. Therefore, student achievement levels can be used to collect using big data techniques and improve prediction accuracy by using big data fitting curves. Then systematically analyze the influencing factors and recommend the choice of voluntary application to students. Figure 2 shows the design of intelligent recommendation of big data students' voluntary filling system. As can be seen from the figure, the key of the intelligent recommendation engine is the influence factor. Collect basic data, using data mining technology, as much student data and impact as possible are used as an intelligent recommendation module to improve the accuracy of recommendation [4]. The benefits of data model processing over the weight ratio of related factors in complex scores based on big data technology can check various formulas of complex count results through techniques such as data model modeling, starting from verifying whether the recommended results are valid and accurate. In the input design, after entering the correct information, the corresponding output in the database. With no such output, the information in the system database is somewhat incomplete. The input and output of the system affects the intelligent recommendation effect to varying degrees, so the design of input and output data can not be careless.

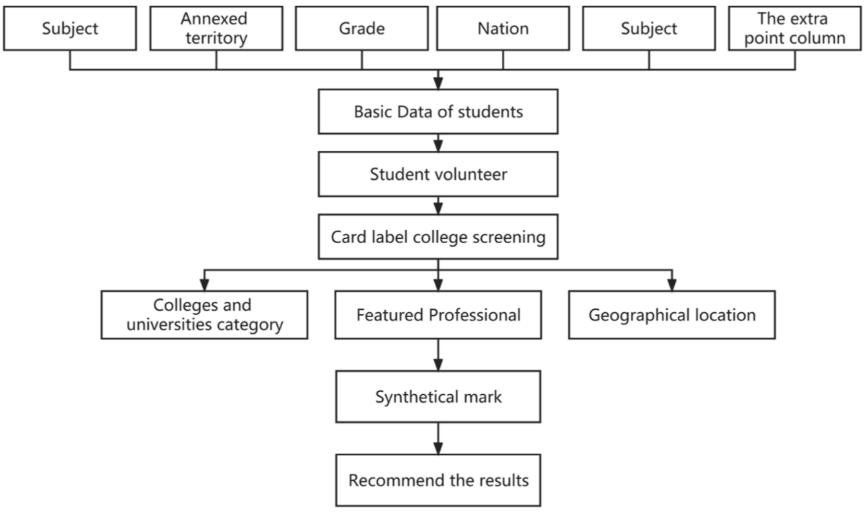

Fig. 2. Intelligent recommendation module of big data student volunteer filling system (process 1)

5.3 Risk Assessment Application

The state has accumulated a large number of detailed data on the college entrance examination, including student information, examination information, college information, etc. These massive data contain a lot of useful knowledge other than the college entrance examination results. The use of these data is an urgent need among education departments at all levels. Big data analysis technology is used to extract, transform, analyze and other modeling processing, find the potential relationships and patterns in the data, and promote the scientific and efficient analysis and use of college entrance examination results. In order to make the candidates choose the major from a scientific perspective, let the students gradually understand the various professions in the society, as well as the professional skills needed in class. And through the analysis of personality, behavior, habits, thinking characteristics, to judge the students' professional trend and career trend, to provide candidates with professional choice suggestions. Big data analysis can help students understand and understand their strengths and weaknesses. Only by truly understanding themselves can they make scientific plans for their future. It can be said that the use of big data provides a more scientific choice for college entrance examination application. However, the specific college entrance examination voluntary filling must fully take into account the students' personal characteristics, development planning and other influencing factors. However, it needs to be recognized that the high dependence on big data when filling in the college entrance examination will lead to unpredictable risks, so it is necessary to increase the risk assessment module. As shown in Fig. 3, relevant historical data must be extracted, and the authenticity of the data should be paid attention to based on the risk prevention principle. The relationship between the data processing results is finally fully displayed in the risk assessment interface.

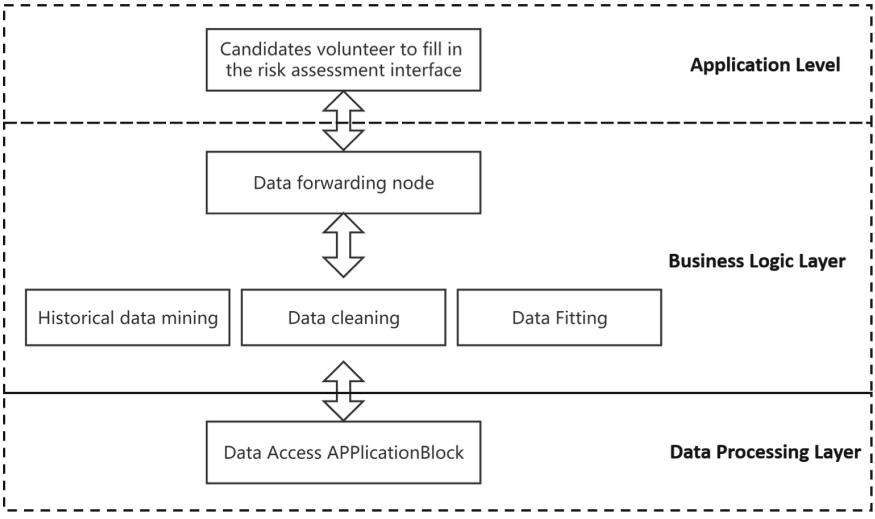

Fig. 3. Intelligent recommendation module of big data student volunteer filling system (process 2)

6 Conclusion

The design and application of contemporary big data technology in the college entrance examination voluntary application has more requirements for the database function and related system of the college entrance examination voluntary registration system. Students and parents can transfer information to the system database to query the results in recent years. Making full use of big data analysis can help students make scientific choices when volunteering. In short, the design and application of big data technology in the college entrance examination voluntary application is a very complex and systematic engineering, and various factors should be considered comprehensively to help students to make rational choices.

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