

The application of data mining in the fine management of students

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Abstract. This paper introduces the connotation of students' fine management, and discusses the significance of data mining in the fine management of College Students' work. This paper constructs data mining modeling based on student's fine management system, and analyzes and predicts student behavior based on data mining. Nowadays, with the rapid development of mobile Internet, data mining and AI technology, the traditional management system and way of college students are no longer able to keep pace with the times. The establishment of a more intelligent management model of college students has become an important scheme to strengthen the management of students and improve the efficiency of work. The use of data mining and artificial intelligence technology realizes the scientific fine management of students.

Key words. Data mining, fine management, student behavior, model.

1. The connotation of fine management of students

First, according to the student's behavior track on the campus and the network, we collect the students' online and offline data, complete the student fine management platform database construction. The two is to build a fine management analysis and evaluation model for college students on the basis of obtaining massive data¹. The three is to feed the results of the large data analysis to the student management workers to guide the work.

The model using the mobile Internet platform is convenient, efficient and higher degree of automation features, through teacher, counselor, channels of communication between the parents of students, make they can at any time, any place finish anything related to college students education management, namely the elaborating management college students².

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2. The significance of data mining in the fine management of College Students' work

At present, most college students daily management cost a great deal of counselors work time and energy, such as checking attendance, please terminate his/her leave, notify the parents, to handle students of various kinds of application, organize related data, such as a heavy transactional work. It leads to only "countersunk cart", to "look up at road", and even neglected the student thought political education the job. The artificial intelligence college students' refined management platform based on mobile Internet and data mining technology is relatively scarce³.

College students' study, life and other activities in the university, leave a lot of valuable data and behavior. The data is stored in the educational administration system for years, library system, logistics system, financial system, financing system, employment system, and other school related functional departments own information systems, or even a counselor in the spreadsheet. These huge amounts of information, stored in the server, not exchange, integration, mining, not related to a system, is not valuable, meaningful information, therefore, unable to effectively utilize the existing data inference and evaluation related events.

In the traditional student management mode, the teacher and student worker only talk privately, and communication, such as student worker contacting parents also depend on the telephone, SMS, instant messaging software for human communication. Teachers and parents are lack of communication channels. The pattern of this kind of communication is often called student education management vacuum, leading to big problems, so that parents didn't know the truth about their children. The student work in a passive state, also bring a certain pressure to the teaching work^{4,5}.

3. The construction of the student management system in Colleges and Universities

The platform construction is divided into three aspects: one is the construction of database, the students learning situation performance, daily performance and psychological condition data of the absolute safety guarantee. Counselors can go through WeChat mobile terminal to access system whenever and wherever possible; the two is the information attendance, the teacher can go through the WeChat platform with a query to all subjects and their daily performance of the students. They can carry out targeted education and teachers will be see the results of student attendance; the three is, when students are learning in school, if the value reaches a preset threshold, the system will automatically push the trigger message, using the popular WeChat platform to the instructor, students' parents push reminder message, feedback from students in school learning. At the same time, the WeChat management platform also integrates homework submission correction system, graduation project management system, student leave examination and approval system, etc., so as to realize the meticulous management of college students⁶.

At the same time, the system will produce results according to the behavior

of students based on campus data, for example, access to records, library records, and academic records of consumption trend of dormitory. The large data analysis provides a reference for students with the future behavior of students and may result in speculation and scientific evaluation.

The platform is a fine management platform for college students based on mobile Internet and data mining, which integrates student management, educational administration, ideological education, daily service and information sharing⁷.

4. Data mining modeling based on student fine management

A model is established to make a reasonable analysis of the existing data. Taking advantage of it will not only build student management platform collect and summarize the existing data, but also gradually collect students' information distributed in different systems in the past, and collect information on student achievement, graduation information and school conditions. The system uses the information collected to carry on the correlation, and establishes the corresponding mathematical model through reasonable analysis⁸.

Bias classification uses the Bias theorem in statistics to predict the probability of class members, that is to say, given a sample, calculate the probability that the sample belongs to a specific class⁹⁻¹⁰:

$$P(h|D) = \frac{P(D|h)P(h)}{P(D)} \quad (1)$$

The above are regression coefficient can be obtained by the least square method according to the given data point.

$$\alpha = \bar{y} - \beta\bar{x} \quad (2)$$

$$\beta = \frac{\sum_{i=1}^S (x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^S (x_i - \bar{x})^2} \quad (3)$$

The system using the mathematical model to analyze real-time situation of existing students, for students who need help (such as credit defaults will further increase, may not be able to graduate, may not be able to find work etc.) to provide appropriate assistance, and will help the results of feedback to the system, for deeper analysis, to provide a theoretical basis for further education after work. In the teaching process, teachers' feedback information and system will also be processed centrally, and corresponding information recommendation and reminder will be recommended when students select courses, so as to recommend the best teachers for the right students. Refer to students' evaluation of teachers' performance in class,

Predictor variable	R squared	R squared	B	t
Text-messaging	0.125	0.125	0.282	13.50
Games	0.227	0.103	0.19	8.15
Internet	0.25	0.023	0.155	7.30
Chat applications	0.266	0.016	0.141	6.42
Calls	0.281	0.016	0.133	6.36

Figure.1 shows precision and recall of various algorithms for the datasets. These results confirm the accuracy result. Nave Bayesian model scores the highest in precision and recall for the graduation datasets. This leads to the conclusion that Na?ve Bayesian performs better than other classifiers to predict graduation.

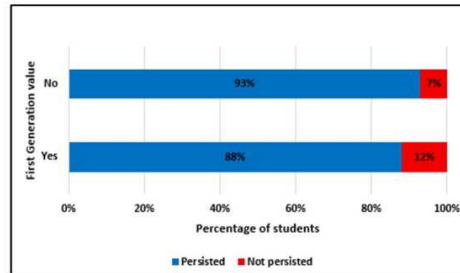


Fig. 1. Persistence distribution

From the contours, the second group of students is closer to the third round group. There are some disturbing data in the second groups of students, which lead to repeat data with third classes of students, making some points fall into third kinds of student groups. As shown in Figure.2.

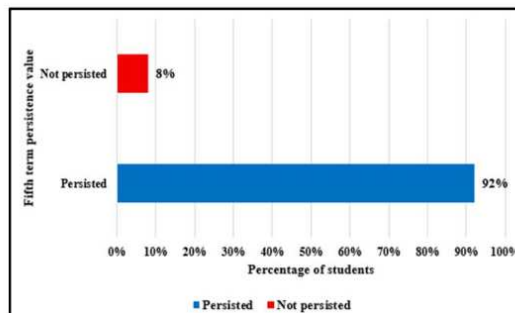


Fig. 2. Distribution of terms

The system adjusts the node precision from 10. The results show that the students can be divided into 3 categories as shown in Figure.3.

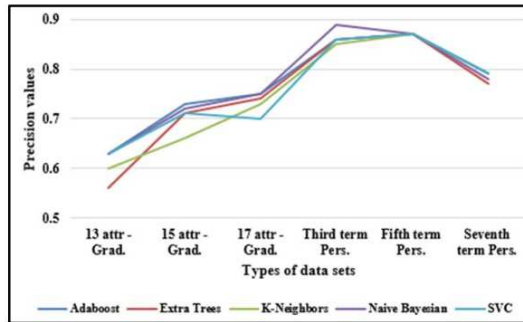


Fig. 3. Accuracy of the five classifier for the five datasets

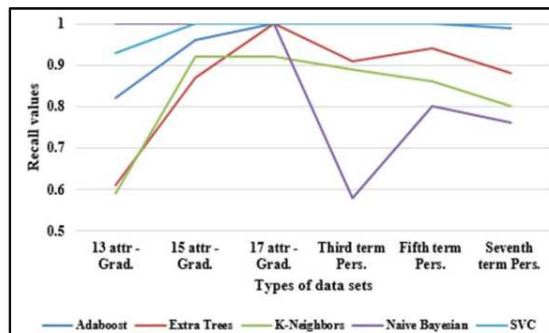


Fig. 4. Precision of the different classifier models

6. Conclusion

With the development of mobile Internet, big data technology is widely applied in student management. The fine management mode of college students crosses the boundaries between schools, parents and students, which provides a good theoretical foundation for achieving better management of college students. At the same time, the construction of the model based practice platform provides useful experience for the follow-up research. Generally speaking, there are still many problems to be studied in the construction of student management platform based on mobile Internet and data mining, and the proposal of fine management mode provides a useful thought and reference for these problems.

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