

Application and Integration of Stochastic Mathematical Decision Tree Modeling Algorithm in Higher Vocational Mathematics Training Intelligent Platform

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Abstract: The classical decision tree algorithm in the data mining algorithm is analyzed and studied, the generation principle and steps of the decision tree algorithm are described, and the advantages and disadvantages of the commonly used decision tree algorithms ID3, C4.5 and C5.0 algorithms are analyzed. The strategy of deep integration of information technology in higher vocational mathematics teaching is explored. Deep integration of information technology and mathematical modeling in higher vocational mathematics teaching, optimizing teaching content and teaching mode, constructing perfect curriculum resources, improving teaching efficiency, and stimulating learning interest.

Keywords: Stochastic Mathematical Decision, Decision Tree Modeling, Higher Vocational Mathematics, Training Intelligent Platform

1. INTRODUCTION

Data mining is not a multidisciplinary field, it is one of the most active branches of database research, development and application [1]. It integrates database technology, artificial intelligence, machine learning, neural networks, statistics, pattern recognition [2], knowledge base systems, knowledge Obtain. The research on the trend of population mortality has a long history. As early as 1729, De Moivre used the force of death to describe the death process [3]. The survival curve model he applied was widely used at that time, which was also the earliest deterministic mortality model. This model does not describe the random variation trend of mortality, but fits the variation of mortality data through a multi-parameter expression [4].

Therefore, in order to cultivate and create a better differentiated competitive advantage in the new market, the business management model and service value system of enterprises [5] have gradually shifted to the value orientation of customers, focusing on the real needs of customers, in-depth understanding, Analyze and guide customers. 2020 is a special year. In the context of national epidemic prevention and control [6], in February 2020, the "Notice on the Work Arrangements for "Scheduling and Suspension of Schools During the Delayed Opening of Primary and Secondary Schools" was released [7]. The introduction of higher vocational mathematics is an important subject, a compulsory course for many students, and a difficult subject at the same time. It is not conducive to students to absorb knowledge [8], and it is easy to make students feel bored. Mathematics teachers in higher vocational colleges can use online and offline integration methods to carry out teaching [9], so that students can actively participate in mathematics learning. After artificial intelligence has risen to the national strategic level, high-quality platforms for the field of AI education have developed in an all-round way, and the integration of intelligent means has become a modern teaching method. main trends [10].

At present, colleges and universities have a certain investment in the teaching of integrating information technology [11], but their role in higher vocational mathematics teaching is

limited. Higher vocational mathematics courses are faced with many difficulties. The decline of the quality of students in vocational colleges, the continuous compression of course hours [12], and the difficulty of traditional mathematics classroom teaching mode to achieve good teaching effects all affect the development of teaching [13]. Data mining is a promising and thriving frontier of database systems and new database applications, and is one of the most active branches of database research, development and application [14]. It is not satisfied with simply querying the data, but wants to find out more useful knowledge from a large amount of data. The main work of the article consists of two parts [15].

The first part describes specific methods for improving the fitting effect of random mortality models. Through the process of decision tree construction [16], taking Lee-Carter model and Renshaw-Haberman model as examples, the fitting effect of random mortality model is improved, and the different aspects of decision tree under different models are analyzed to improve the model [17]. The improved fitting results are compared with the original model fitting results to test the accuracy of the original model fitting. At present, in-depth analysis and research have been carried out on the prediction of customer churn in the IT industry in China [18], resulting in a large number of theoretical results and Literature analysis data, and even some IT companies have developed their own customer churn prediction system [19]. In the process of analysis, the author takes into account the long time span of 15 years, and it is necessary to select representative literature for analysis every year, so TOPN=50 is specially set [20].

In addition, three indicators of the threshold are set, where the c value is set to (2, 2, 20), the cc value is set to (4, 3, 20), and the ccv value is set to (3, 3, 20) [21]. The choice of algorithm is Pathfinder. Mathematical knowledge in higher vocational colleges is relatively boring and difficult to understand. Students are prone to resisting emotions. Many students are listening to the class on the surface [22], but they are actually in a daze. Some students even appear sleepy and listless in class. These phenomena will hinder the development of higher [23] vocational mathematics teaching. Facing the new generation of students who are currently growing up under the

screens of mobile phones, computers, iPads, etc., traditional classrooms [24], whether in organizational form or teaching mode, are mostly teacher-centered, and the model lacks innovation. In terms of improving teaching effects and learning initiative appears powerless [25].

2. THE PROPOSED METHODOLOGY

2.1 The Stochastic Mathematical Decision Tree Modeling Algorithm

In fact, data, information and knowledge can be regarded as different forms of generalized data representation. It is no exaggeration to say that people are greedy for the possession of data, especially the development of computer storage technology and network technology has accelerated the scope and capacity of people's collection of data. This greed results. A decision tree is a series of splitting rules that are learned from the training data set, including the selection of features and the selection of optimal split points.

When studying classification problems, decision trees are classification trees. During classification, the decision tree algorithm will divide the data set. There are countless conditional probability models of classes based on feature space division; for regression problems, decision trees are regression trees. For example, in " At the International Conference on Knowledge Discovery, many scholars suggested a distinction between the two terms. The core idea is the whole process of discovering knowledge from the database, and it is a specific and key step in this whole process. This view has its validity. Whether the model can fit the existing data well is an important criterion for judging the pros and cons of the random mortality model. Therefore, improving the fitting effect of the random mortality model is a major direction of studying such models.

The boosting method in machine learning technology is a common method to improve the accuracy of the model. KDD-related data is extracted from the database according to the user's needs, and KDD will mainly perform knowledge extraction from these data. In this process, database operations will be used to simply process the data, but some redundant and irrelevant data will be roughly deleted. The establishment of the classification model is to establish a model to describe the predetermined data class or concept set. In this stage, the establishment of the classification model is completed by analyzing the training sample data. Each sample in the training sample data belongs to a predefined class.

2.2 The Higher Vocational Mathematics Training Intelligent Platform

Vocational mathematics knowledge is relatively boring and difficult to understand, and students are prone to resistance. Many students are listening to the class on the surface, but in fact they are in a daze. Some students even appear sleepy and listless in class. These phenomena will hinder the teaching of mathematics in higher vocational education. development. As a public basic course, advanced mathematics mainly serves the study of follow-up professional courses. It is very important for the follow-up development of students to cultivate students' basic computing ability, modeling ability to deal with practical problems, and self-learning and inquiry ability.

The current situation of teachers speaking and students listening in the traditional mathematics of higher vocational colleges is difficult to reflect the student-centered teaching concept. Rain Classroom Wisdom Platform is a teaching tool

that provides three-dimensional and intelligent services for classroom teaching based on the thinking of "Internet +" and using modern information technology. The smart platform establishes the connection between teachers and students through mobile phone WeChat, and integrates new teaching concepts, teaching methods and evaluation methods into teaching. The teaching goal is like "a beacon that guides the ship forward in the sea", which has a guiding role in the development of teaching links. Both the design of teaching activities and the evaluation of teaching are based on teaching objectives. By expanding the teaching target hierarchy diagram, it can be found that it is mainly composed of three levels, as shown in Figure 4-2.

Most of the traditional higher vocational mathematics teaching is carried out by teachers' oral narration, which is relatively monotonous and boring as a whole. The traditional classroom method is limited by the teaching hours and space, and the opportunities for teachers and students to discuss and study are limited, which makes it difficult to meet the mathematical ability requirements of talents in national strategies such as new engineering construction and artificial intelligence. At present, most vocational mathematics courses adopt the mode of multimedia + blackboard, textbook + practice, teachers teach, students practice, and students have less time for independent thinking and learning. Students can only passively accept it, and it is difficult to exert their subjective initiative. In the long run, it is not conducive to the improvement of teaching efficiency. By adopting a teaching mode that integrates online and offline. Before class, teachers issue preview tasks through the Rain Classroom wisdom platform: First, students are required to look for the knowledge related to differential calculus in the professional courses "Electrical and Electronic Technology" and "Automotive Engine" they are learning, and ask questions.

2.3 The Higher Vocational Mathematics Training Intelligent Platform Application Integration

There are many difficult contents in higher vocational mathematics. It is difficult for students to listen to teachers' lectures directly in the classroom, which is difficult to achieve the desired effect and is not conducive to the improvement of teaching efficiency. At this time, teachers can guide students to preview offline. The biggest role of preview is to pave the way for learning in class. In the process of intelligent information technology integration, it is necessary to ensure that the selected information technology is stable, reliable, intelligent and simple, and can effectively assist teaching to solve the difficulties of traditional classrooms. At present, multimedia technology has been widely used. In the teaching of mathematics courses, based on the rain classroom wisdom platform, teachers can timely obtain the students' preview data, classroom attendance data, classroom participation data, random test data, group task data, etc. After-school test data, math problem feedback data.

The one-fold cross-validation method firstly divides the entire data set into equal subsets, and then performs the second iteration, using each subset as the test set in turn, and the other subsets as the training set. Compared with the difficulty of explaining the results of black-box models such as artificial neural networks, the decision tree algorithm adopts a white-box model, and its selection is based on Boolean logic that is easy to explain. Quickly. It mainly processes the selected data samples before data mining, makes up for missing values of attributes and processes noise data, and finally integrates the

data, so that the quality and format of sample test data meet the requirements of data mining algorithms.

Because the data to be processed may have various data quality problems, for example, the data field may contain incorrect values or contain null values, etc." When it comes to intelligent mobile intelligent terminals, it is understood in a narrow sense from its literal meaning. The familiar mobile smartphone for everyone. However, the intelligent mobile terminal emphasized in this study refers to the device that can be embedded in the computer system, and its meaning is understood from the perspective of information technology. With the help of taxonomic vision, in addition to mobile smart phones in the narrow sense, it also includes laptop computers, tablet smart terminals, etc. Due to the existence of tree pruning and parameter control, the tree algorithm can better fit the data without overfitting, thereby greatly improving the generalization ability of the model.

3. CONCLUSIONS

The classical decision tree algorithm in the data mining algorithm is analyzed and studied, the generation principle and steps of the decision tree algorithm are described, and the advantages and disadvantages of the commonly used decision tree algorithms ID3, C4.5 and C5.0 algorithms are analyzed. The deep integration of the Internet, information technology, mathematical modeling ideas and mathematical tools to optimize the teaching mode is an effective means to improve the quality of teaching. Teachers need to have strong information application ability, and scientifically use multimedia technology, mathematical modeling tools, mobile software, micro-lecture videos, online teaching platforms, etc. to optimize classroom teaching.

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