

Research on Juvenile Crime Education Based on Data Mining

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Abstract: At present, juvenile delinquency has become one of the three major public hazards in the world, bringing serious harm to society as well as environmental pollution and drug trafficking. Juvenile delinquency has the greatest impact on social development and stability, and has become an important issue of concern throughout the world in recent years. With the increase of juvenile delinquency cases in recent years, people pay more and more attention to the prevention and correction of juvenile delinquency. Juvenile delinquency is a kind of anomie behavior under many factors. As the basic line of defense to prevent juvenile delinquency, “soft quality” education must be consolidated and play its due role. This paper uses data mining decision tree model to quickly and effectively analyze juvenile delinquency data, which has a certain supporting role for decision-making work of relevant departments, and also provides theoretical guidance for juvenile delinquency prevention education, so it has very important practical significance.

1. Introduction

In the minor stage, most students are receiving education, and it is also an important period of physical and psychological development. In this period, students are also in the rebellious period of youth, easily influenced by the bad atmosphere of the outside world, infected with bad habits, and seriously committed crimes^[1]. Juvenile delinquency is a comprehensive reflection of various negative phenomena in society, and it is also the inevitable result of misconduct^[2]. For a long time, the problem of juvenile delinquency has been the focus of attention from all walks of life, and it is also a difficult problem that confuses judicial practice institutions and legal theorists. It is also one of the main topics that need to be dealt with urgently to ensure social well-being, maintain social order and create a beautiful environment for politics, economy and culture^[3]. There are many factors that cause juvenile delinquency, such as various undesirable phenomena in the society, family factors, serious lack of school education and the level of minors' knowledge, which also reflects that we have not done enough in juvenile education and prevention of juvenile delinquency^[4]. It is precisely because the whole society lacks an effective normative system and normative codes of conduct and value standards, which is closely related to our educational mistakes, especially the mistakes in moral education^[5]. In the face of the growing number and severity of juvenile delinquency in the world, people have gradually come to realize that it is useless to simply crack down on and punish juvenile delinquency. We must strengthen the education and protection of minors so that their criminal behavior can be prevented first^[6]. In the prevention of juvenile delinquency, education has both an indicator role and a permanent significance^[7]. Therefore, both at home and abroad attach great importance to the role of moral, cultural and educational means in the prevention of juvenile delinquency^[8].

2. Analysis of Juvenile Delinquency

2.1 Main Features

Due to the increasing progress of society, minors are becoming more and more mature physically^[9]. However, the psychological education they received remained at an immature stage, especially for minors who had committed crimes. Their psychological state was extremely complex,

usually reflected in indifference, abnormal needs, low knowledge, eccentric temper and poor willpower^[10]. Because of the influence of these psychological factors, juvenile delinquency often has the following characteristics:

(1) The crime age tends to be younger. Younger age refers to the development trend that the age of juvenile delinquency and the average age of crime show a significant decline. Minors' physical development and psychological development do not develop simultaneously, because their own psychological development is immature, blind obedience and curiosity are strong, and they are easily influenced by the external adverse environment to commit crimes.

(2) The types of juvenile crimes have gradually developed from relative concentration to diversification. According to the classification of crimes in criminal law, according to the types of crimes in the past, they mainly focus on theft, robbery, provocation, affray, intentional injury, rape, etc. But now it is no longer confined to a single crime in the past, but there are various types of crimes, increasing high-tech criminal means, complicated personnel levels and wide coverage.

(3) The educational level is low. Due to the serious dereliction of duty of guardians and family education, young people dropped out of school prematurely, unable to accept good school education, and formed abnormal personality, dark psychology and world weary mood.

(4) Bad moral behavior is the precursor of criminal behavior. The generation of minors' bad moral consciousness, the occurrence of illegal acts and criminal acts has a gradual development process. They always start from the bad influence from family, school, society and other aspects in the growth process and internalize the bad moral concepts into their own moral concepts, and then commit crimes under various conditions.

(5) The forms of cyber crime are increasingly diversified. The diversification of crime types is closely related to minors' frequent contact with bad information on virtual networks. When the virtual network scene is brought into real life, once the outside world is suitable for committing crimes, it will experience the pleasure of online game violence and be tempted by the excitement of online games to commit crimes.

2.2 Analysis of the Causes of Illegal Crimes

To prevent and educate juvenile delinquency, it is necessary to analyze the causes of juvenile delinquency and propose legal solutions. This is an effective way to prevent juvenile delinquency and an important prerequisite for finding solutions. The reasons are as follows:

(1) Self factors. Even though the physical and physiological functions of minors develop at a relatively high speed, their glands are still immature and it is difficult to control their personal behavior. Therefore, they usually show their excessive energy and apply it to incorrect channels. Under the guidance of various social factors, it is very easy to cause a series of criminal acts.

(2) School education factors. Some defects and mistakes in school moral education and the misplacement of educational ideas will have a negative impact on minors' criminal psychology, making them go further and further on their way of getting lost.

(3) Social factors. There are a lot of bad entertainment places in the society, and they do not comply with the relevant provisions of laws and regulations on entertainment places, which is very attractive to minors who are not familiar with the world. In the new era, the market economy has further strengthened the drive of people's economic interests. In addition, the lack of a sound economic management mechanism and the guidance of social values, driven by interests, makes it easy for minors to embark on the road of extremism.

(4) Family education factors. Minors are influenced by their parents in the family, and have primary advantages in the formation of sound personality. Family moral education affects the all-round development of minors and often determines the development level of minors' moral consciousness. Improper family education and parents' low quality will both affect minors' mental health.

3. Application of Data Mining in the Analysis of Juvenile Delinquency

3.1 Decision Tree

Juvenile crimes not only affect the healthy growth of minors, damage the interests of the people, but also hinder the harmonious development of society. Therefore, it is an urgent and arduous task to analyze the causes of juvenile delinquency, find effective solutions as soon as possible, actively prevent juvenile delinquency, and ensure the healthy growth of the juvenile generation. It is necessary to conduct a comprehensive and comprehensive analysis of juvenile delinquency to form an effective record and analysis mode. It is particularly necessary to analyze the deep mining algorithm for large capacity databases.

Decision tree is a common data description and classification model in the field of data mining, which is mainly used for data classification. It is a tree structure. The data samples are tested, and the data samples are divided into different data sample subsets according to different results. Each data sample subset constitutes a sub node to generate a decision tree. Each leaf node corresponds to a classification. According to the decision tree formed by the training subset, the leaf node represents the category belonging, and the expected rule is from the tree root to the leaf node. The correct decision set is obtained by repeatedly updating the training subset. At the same time, noise and outliers in the data are removed by pruning to improve the accuracy of data classification. From this theory, the analysis flow chart of juvenile crime information is obtained, as shown in Figure 1.

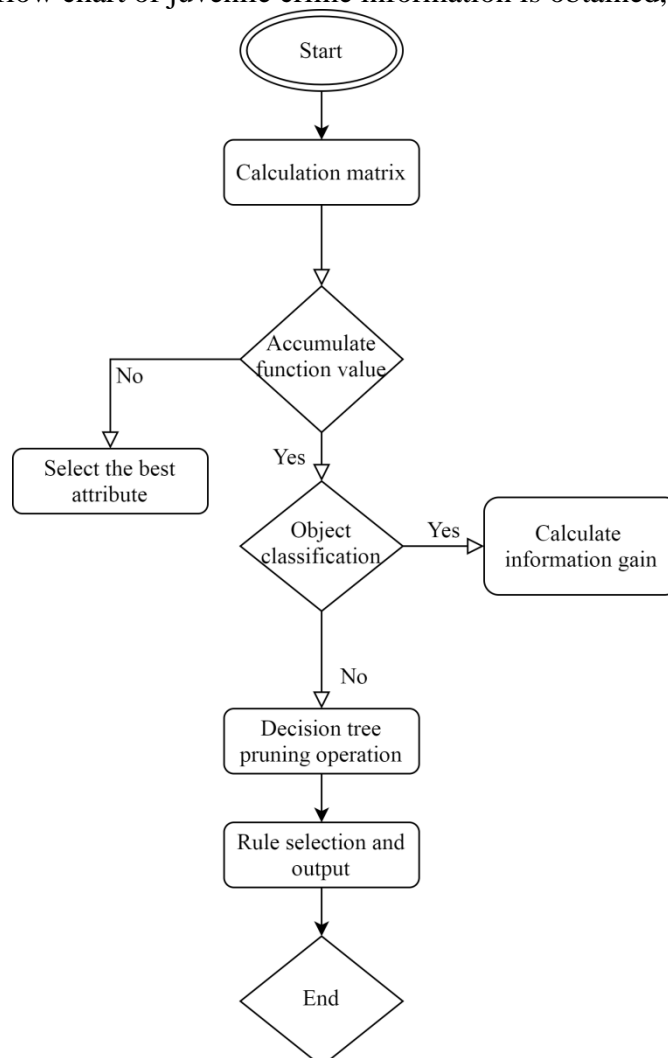


Fig.1 Flow Chart of Analysis of Juvenile Crime Information

In the implementation process of the algorithm, attributes of the decision table are firstly reduced to obtain the important attributes that really affect the decision. Then the decision tree is constructed, and finally the decision prediction accuracy is enhanced by pruning and rule filtering.

3.2 Decision Tree Construction of Juvenile Delinquency

Before analyzing juvenile delinquency, we can have a general understanding of the distribution

of juvenile delinquency types. Then extract the key words and concerns, and establish a database of criminal acts based on “people” and “cases (events)”, including personnel, cases (events), objects, locations, organizational elements, etc., and analyze and design the algorithm on the basis of this database. Set S as data set and $\{S_1, S_2, \dots, S_n\}$ as category set. Select an attribute R to divide S into multiple subsets. Let R have values that do not coincide with each other, then S is divided into n subsets. According to the actual situation, we choose 8 behavior attributes as the decision model. 8 attributes, including gender, age, education level, family environment, parents' education level, household registration, and charges. Then compare the behavior to be classified with the behavior of each cluster center, and put it into the nearest cluster. When all the behaviors are divided, recalculate the cluster center according to the clustering results.

Table 1 Information Entropy And Branch Information Table

Branch attribute	E(A)	Gain	Branching order
A1	0.541	0.2166	1
A2	0.6412	0.2936	2
A3	0.6692	0.1846	3
A4	0.6831	0.2811	4
A5	0.6587	0.2771	5
A6	0.689	0.2126	6
A7	0.6865	0.2377	7
A8	0.5098	0.1287	8

It can be seen from the conclusions in the table above that family education has a significant impact on minors during their growth, followed by social environment such as schools. The income rules are in line with the reality. Through analysis, the staff can enter the conditions to search according to the needs of the case to obtain the knowledge of interest. These information with similar characteristics can effectively analyze the case, and more importantly, it can also summarize the characteristics of these information to help prevent similar cases.

4. Conclusions

Juvenile crime not only affects the healthy growth and development of minors themselves, but also affects the stability and development of the whole country and society, and relates to the future of the country and the rise and fall of the nation. Therefore, it is urgent to take various effective measures to purify the social environment, strengthen the legal education in schools, strengthen the educational awareness of parents, improve the mental health level of minors, and actively prevent and reduce juvenile delinquency to maintain social stability. It is of great significance to deeply understand the characteristics and present situation of juvenile delinquency, and to seek specific methods to prevent and solve juvenile delinquency from family, school, society, legal system and other aspects. The data analysis of juvenile delinquency itself is a subject involving a wide range. In practical application, if we collect as many classified items as possible on the basis of a large amount of data, and combine the professional knowledge and characteristics of crime analysis to analyze them concretely, we will get a meaningful analysis model. The rules obtained by the decision tree algorithm proposed in this paper in the analysis of juvenile delinquency are consistent with the reality, pointing out the important factors leading to juvenile delinquency, which has prominent practical guiding significance for the public security organs to crack down on and prevent juvenile delinquency, and to strengthen crime prevention education.

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