

Retraction

Retracted: Dynamic Modeling and Analysis of Innovative Development Model and Ideological and Political Education Based on Big Data

Mathematical Problems in Engineering

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their

agreement or disagreement to this retraction. We have kept a record of any response received.

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- [1] X. Xie, "Dynamic Modeling and Analysis of Innovative Development Model and Ideological and Political Education Based on Big Data," *Mathematical Problems in Engineering*, vol. 2022, Article ID 8804756, 9 pages, 2022.

Research Article

Dynamic Modeling and Analysis of Innovative Development Model and Ideological and Political Education Based on Big Data

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With the increasing number of college students, the difficulty and workload of ideological and political education are also increasing. For the calculation and analysis of big data, it is most suitable to use data mining algorithm for calculation and research. In order to help college students' ideological and political education to develop and innovate, this paper establishes a new model of college students' ideological and political education combined with particle swarm optimization algorithm to help carry out college students' ideological and political education. The particle swarm optimization algorithm is tested. Therefore, this paper uses data mining algorithm to calculate and analyze the research in this paper. The algorithm is tested and analyzed. Through the test of data mining algorithm, the calculation accuracy of the algorithm is proved, and the feasibility of this paper is proved. This paper studies the ideological and political education by using data mining algorithm. The computational efficiency of the optimized data mining algorithm is twice that of the traditional algorithm, and the optimized algorithm has also been significantly improved. In general, the data mining algorithm optimized in this paper is reasonable, which can improve the calculation accuracy and efficiency of the algorithm.

1. Introduction

Nowadays, the development of society has brought us into a new environment. In the current big data and self-media environment, this paper must also keep pace with the times in ideological and political education research [1]. In the context of a new era, this paper needs to conduct innovative research on ideological and political education and use new ways of education to educate young people today [2]. But now all kinds of information are more complicated, and the difficulty of education reform is also very large [3]. Through the research of data mining algorithms and the ability of data mining algorithms to analyze and calculate big data, this paper helps us to optimize and reform ideological and political education deeply [4]. Also, through some optimization of traditional data mining algorithms, this paper can better calculate the content of calculation [5].

It continues to carry out the program of university enrollment expansion. But with the quality of citizens constantly improving, the difficulty of ideological and

political education is ensuing [6]. Ideological and political education has always been the center of education in the country. When cultivating students' cultural level, the ideological and political education of students also needs to be paid more attention. For the rising number of college students, the ideological and political education is carried out through computer [7]. Based on the detailed analysis and research of need theory, a timeliness model of college students' ideological and political education combined with particle swarm optimization is established in this paper to help us carry out the ideological and political education of college students. But the combination of the need theory and particle swarm optimization is the place where it is needed to pay more attention, and it is also the difficulty of calculation. The two theories are combined with the calculation of this article [8].

Particle swarm optimization algorithm, also known as particle swarm optimization algorithm or bird swarm foraging algorithm, is abbreviated as PSO [9]. It is a new evolutionary algorithm. PSO algorithm is a kind of

evolutionary algorithm, which is similar to simulated annealing algorithm [10]. It also starts from the random solution, searches for the optimal solution through iteration, and evaluates the quality of the solution through fitness [11]. However, it is simpler than the rules of genetic algorithm, and there is no “crossover” and “mutation” operations of genetic algorithm. It searches for the overall optimal solution by following the best quality currently searched. This algorithm has attracted attention for its advantages of easy implementation, high precision, and fast convergence and has shown its advantages in solving practical problems [12].

This paper mainly studies the data mining algorithm for the calculation of ideological and political education reform. The first is a comprehensive analysis and calculation of data mining calculation steps. The steps of data mining can help us to understand the difficulties and the key points of its calculation. After studying the calculation steps of data mining calculation, this paper also needs to study the calculation formulas and mathematical models of data mining algorithms. Then, according to the requirements of the research contents in this article, this paper carries out some optimization.

2. State of the Art

In terms of scientific definition, data mining is a process of extracting information and knowledge that are hidden, unknown, and potentially useful from a large number of noisy, incomplete, fuzzy, and random data. From a technical point of view, data mining is a process that uses a series of related algorithms and technologies to extract the knowledge that the industry or company needs and has practical application value from big data. Data mining is not only a specific step in the whole process of knowledge discovery but also the most important core step in the process of knowledge discovery. The qualitative prediction method is used to predict the past and present experience and judgment and intuition of the system. It is mainly based on people’s logical judgment and requires to provide qualitative results such as the direction, state, and form of system development. This method is applicable to systems lacking historical statistical data. Time series prediction, based on the historical data of the system object changing with time and considering the change law of system variables with time, quantitatively predicts the future performance time of the system, mainly including moving average method, exponential smoothing method, trend smoothing method, and so on, which are suitable for predicting the trend of the research object changing with time using statistical data. Causality prediction: there is a certain cause and effect relationship between system variables. Find out the factors that affect a certain result, establish a mathematical model between cause and effect, and predict the change of result variables according to the change of factor variables, so as to predict the development direction of the system and determine the specific value change law.

The study of data mining algorithm is mainly because of the complexity of big data processing. This paper must find a computer algorithm that is suitable for data processing to

help us calculate research. Therefore, in this context, the American scholars first studied the data mining algorithm [13]. This is also due to the high level of technology and computer technology in the United States. Faced with the increasing amount of data, this paper calculates the study of a new type of computer algorithm which is imperative. At the beginning, the research on data mining is only based on the calculation and study of data [14]. Then, as calculation expands, the calculation of data mining algorithms is gradually increasing. The scope of data mining has also gradually expanded [15]. It has become one of the most widely used computer algorithms in the country [16].

China’s domestic research on data mining algorithms started in the nineties of last century. Data mining has been introduced into the United States from within. The study of data mining in China, with the aid of advanced technologies in the United States, has a very high starting point and is developing rapidly [17]. However, the computational studies on data mining in China are mainly theoretical studies, but the application of data mining is rarely applied [18]. This enables us to reduce the application of data mining algorithm examples, for data mining computational research has increased a certain degree of difficulty [19]. This paper studies the calculation of ideological and political education based on the theoretical basis. According to application requirements, it conducts a detailed analysis of its final calculation to achieve the goal [20].

3. Methodology

3.1. The Algorithm Principle of Particle Swarm Optimization.

In PSO, the solution of each optimization problem is a “particle” in the search space. All particles have a fitness value determined by the optimized function, and each particle has a speed that determines the direction and distance they fly. Then, the particles follow the current optimal particle to search in the solution space. PSO is initialized as a group of random particles (random solutions). Then, the optimal solution is found by iteration. Particle swarm optimization (PSO) is actually a computer algorithm based on the simplification of the behavior of a bird colony. The foraging of populations in nature, especially in birds and ants, is very efficient and accurate. There are close cooperation and information transmission patterns between them. Auxiliary calculations could be done based on this behavior. Through study of the bird population, the particle swarm optimization algorithm used in this paper has been popularized. Research process is simulated according to the following scenarios: first, a known area is set up and birds’ food spots are randomly put into this area. Then, a certain number of birds in this area are released, but this quantity is neither too small nor too many. The number of annual classes is set according to the size of area. This paper assumes that all the birds are not aware of the location of the food point. The process by observing birds looking for food and notifying the entire population is simulating. However, the entire avian community did not know the food delivery point in advance, but they could find food points at a quickest speed and notify other individuals quickly. What is

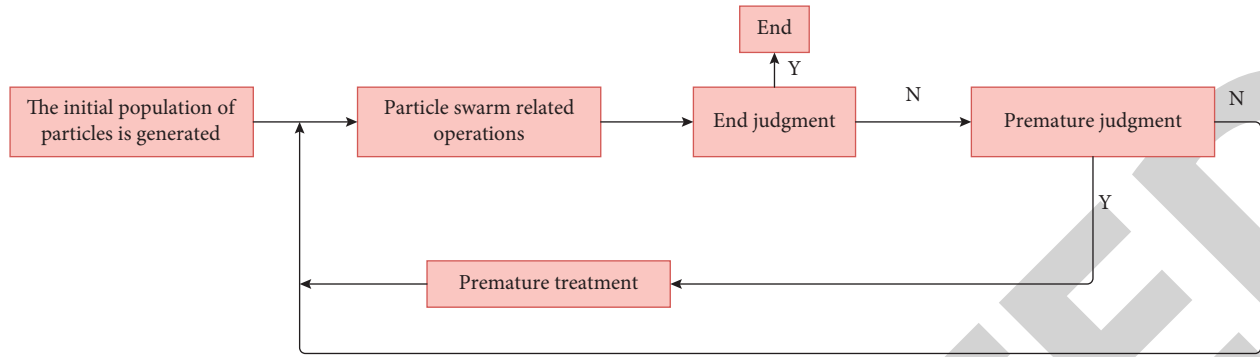


FIGURE 1: Particle swarm optimization algorithm flowchart.

the specific behavior of the bird community? Through the long-term study, groups of birds are spontaneously looking for the area within a certain range, many birds will completely fill the entire test area, the total search range of one or more birds will cover the food delivery point, and then the bird will inform the population to eat. Calculation is to simulate the process. Individuals in birds are regarded as particles or particles. Each particle is probably the best solution for calculation. In this way, the whole process of the particle swarm optimization is described. The flow of the particle swarm algorithm is shown in the form of Figure 1.

In addition, in the calculation of particle swarm optimization, a very important concept is the value of adaptation. The fitness is shown in the form of a function. PSO is initialized to a group of random particles (random solutions), and then the optimal solution is found by iteration. The process of finding food by this bird is not exactly the process of calculation. It has been optimized in the actual calculation. An optimal value for each active area of each particle is calculated and then the best of all the optimal values is chosen. In this way, the whole calculation is finished. This processing will help us analyze the calculation results, and the calculation situation can be checked effectively to help us understand the calculation process and help us improve the accuracy of calculation.

In practical application, the process of the particle in finding the optimal solution is not completely random, and it is subjected to a certain human interference. The degree of interference is set by us. In addition, what has been noticed is that the fitness of each particle cannot be set exactly the same. Furthermore, the difference in the fitness of each particle should be made as much as possible. Because every individual in the bird community is different, the real situation needs to be restored as much as possible. In addition, the calculated particles have multiple kinds of information, which cover a series of information, such as the fitness values that have been set and the scope of the search. All the particles being set up will be found through this information.

When calculating, the movement process of each particle online has been processed, that is to say, when a particle moves to a certain location, another particle will never run to this location again. In this way, a lot of calculation time is

saved so that calculation process can have a correct result. Otherwise, it is likely that the optimal solution cannot be found in the infinite calculation. In addition, this online way can also make particles learn the advanced experience of other particles continuously so that computing efficiency will also increase steadily with the increase of computing time. This is the effect that the traditional particle swarm optimization cannot achieve, and it is also the focus of optimization.

3.2. Mathematical Description of Particle Swarm Optimization. After studying the principle of particle swarm optimization, the mathematical model of the particle swarm optimization and the computing model of the computer are needed to be set up. Also, in this period, the algorithm is needed to be optimized moderately so that it is more adaptable to the application of this article. Next, the modeling process is started.

In this paper, the algorithm principle of particle swarm optimization is introduced in detail. The particle swarm optimization algorithm is a method of obtaining optimal solution by multiple iterations. So next, the mathematical description of the particle swarm algorithm is introduced. First, a population size is needed to be set up. This scale is set as N , particles are set as X , and the location of particles in D dimensional space can be expressed as $X_i = \{x_{i1}, x_{i2}, \dots, x_{iD}\}$; among them, i represents the code of particles and the location of particles is represented by V . Then, P is set as the best position in the position of the particle. The value of the objective function has an effect on the fitness value, which is inversely proportional. The greater the value of the function is, the worse the adaptive value is. In addition, the target function is represented by $f(x)$. This is the minimized objective function; then, the best position of the particle can be calculated and analyzed with the following formula.

$$P_i(t) = \begin{cases} P_i(t), & f(x_i(t+1)) \geq f(P_i(t)), \\ x_i(t+1), & f(x_i(t+1)) \leq f(P_i(t)). \end{cases} \quad (1)$$

The speed of flight is represented by v , and then the calculation is adjusted according to the following formula:

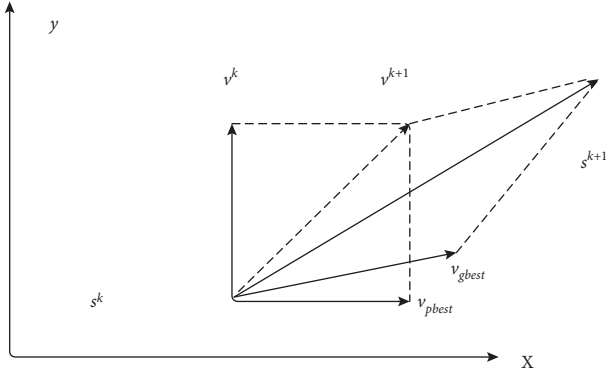


FIGURE 2: Principle of particles moving.

$$v_{id}(t+1) = wv_{id}(t) + c_1 \text{rand}_1(P_{id}(t) - x_{id}(t)) + c_2 \text{rand}_2(P_{gd}(t) - x_{id}(t)), \quad (2)$$

$$\begin{cases} v_{id} = v_{\max}, & \text{if } v_{id} \geq v_{\max}, \\ v_{id} = -v_{\max}, & \text{if } v_{id} \leq -v_{\max}. \end{cases}$$

w in last formula is inertia weight. C is acceleration constant. Through the adjustment of the above formula, the calculation has been optimized. Turn it into simpler calculations.

In addition, the position of particles is adjusted to ensure the accuracy and flexibility of calculation. For the adjustment of particle position, the following formula is used to calculate.

$$x_{id}(t+1) = x_{id}(t) + v_{id}(t). \quad (3)$$

The specific movement of particles is actually done by a variety of factors. Not only it is related to the experience of sports, but this experience refers to group experience, not individual experience. It is also related to the maximum speed. Velocity limits the trajectories of particles and the velocity of motion. The principle of motion of particles is shown in Figure 2.

With the analysis of formulas and pictures above, the movement of particles is the result of the interaction of three accelerations. The first is the influence of the inertia weight. This is determined by the state of its own motion because inertia is the main mode of motion of an object. The inertia weight is actually the effect of the inertia motion on the movement of the object. Finally, continuous analysis is needed, and r_1, r_2 are set as two uniformly distributed random numbers. $\phi = rc$ is defined, and the formula is sorted into the following form:

$$v_{id}(t+1) = wv_{id}(t) + c_1 r_1 [P_{id}(t) - x_{id}(t)] + c_2 r_2 [P_{gd}(t) - x_{id}(t)], \quad (4)$$

$$v_{id}(t+1) = (1 - \phi)x_i(t) + \phi_1 p_i(t) + \phi_2 p_g(t).$$

By optimizing the calculation formula and calculation steps of PSO, the main process of calculation formula has been optimized. But calculations are calculated by computer. So, the computer computing model is needed to be set up,

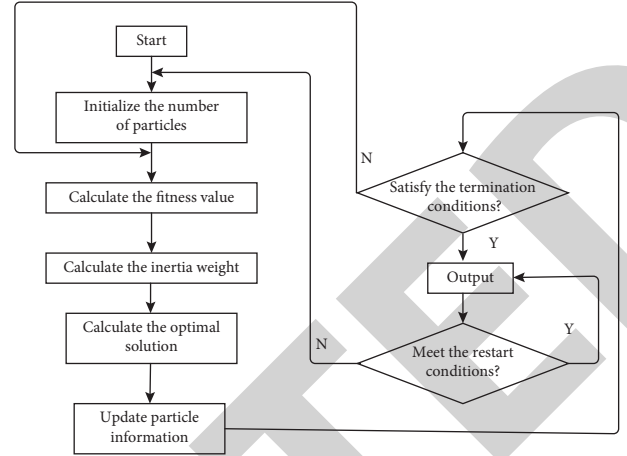


FIGURE 3: Computer calculation model of the calculation process.

and the calculation of this paper through the form of calculation model is carried out and analyzed. The calculation process diagram of the computer computing model that has been established is shown in Figure 3.

3.3. Establishing the Calculation Model Based on Data Mining Algorithm. Data mining algorithms have long been the focus of research. However, in the last century, the research on computational theory was mainly conducted, and the actual application of data mining began to be studied in this century. Data mining algorithm has strong data analysis ability and strong data organization ability. This paper calculates the data mining which is usually associated with the association rule algorithm for computing research. Data mining algorithm extracts and associates data by studying data mining and association rules. It helps us to better analyze the relationship between the data. The two are closely combined. Usually, the data calculated for data mining in this paper is very large and complex, so we need to use some specific data mining calculations to carry out data mining calculations. Generally, this paper is divided into the following steps for data mining calculation. First of all, this paper needs to determine the goal of data mining. Determining the goal of data mining will help us have a direction of data mining. Do not be too blind. The other is data preprocessing. Data mining algorithms face a large amount of data computation. If the data cannot be preprocessed in this paper, data mining will take a lot of time and the calculation accuracy will not be very high. Because there is no data mining data preprocessing. Various complex data will interfere with the calculation target, so this paper cannot accurately calculate the results required in this paper. Data mining preprocessing not only includes the scope of the data delineation but also includes the data this paper need to conduct preassociation rule analysis. Finally, this paper did the data mining calculation process. After this paper calculated the data mining, this paper also needs to analyze the results of calculation. Data mining algorithms are precise because this rigorous calculation of the data in the big data is only useful for analysis of data which are very thorough.

TABLE 1: The usage statistics of data mining algorithms in each model.

	Data mining algorithm structure	Data mining algorithm formula	Data mining algorithm data
1	56 [§]	59 [§]	66 [§]
2	58 [§]	52 [§]	76 [§]
3	59 [§]	36 [§]	46 [§]

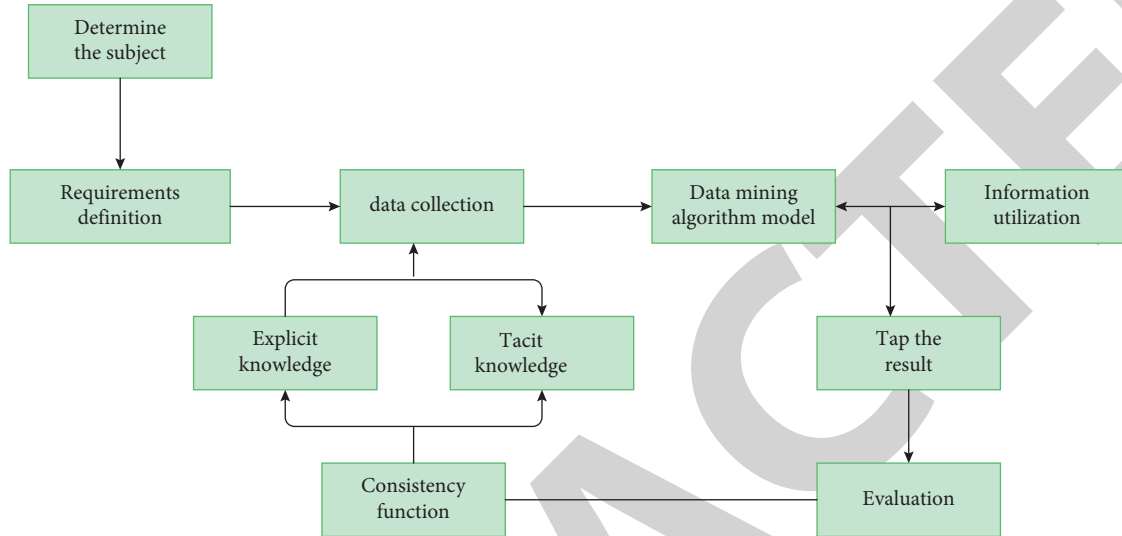


FIGURE 4: Data mining algorithm computer computing model diagram.

In this paper, the computing research of data mining algorithm is based on the limited psychology of young people in the new era. For the calculation and study of this article, this paper conducted some analysis and evaluation according to the usage situation. The test results are shown in Table 1.

For data mining calculations, this paper calculates the data and the results will generally be incorrect. This paper needs to further calculate the association rule calculation data. Through the study of association rules, it is found that the calculation data is not closely related to other data, and these data need to be excluded in the future. Through the calculation of association rules, the calculation results calculated by data mining are finally sorted out, and the correctness of calculation data is reduced. Through data mining algorithms and association rules, finally, the accuracy of data mining results is higher, which is also a great innovation in this paper, which is one of the biggest differences with the traditional data mining algorithm calculation process.

Data mining is analyzed and researched from some incomplete and uncertain data. Through the comprehensive data management of the data needed in this paper, it is the intrinsic significance of the study to study the relationship between the data contents. This is where the purpose of data mining lies. Data mining is the need for us to establish a computer computing model. This paper also established a computer computing model, and the calculation model is shown in Figure 4.

The classification model is a supervised learning model, that is, the classification needs to use some sample sets of

known categories to learn a pattern and use the learned model to label the instances of those unknown categories. When constructing the classification model, we need to use the training set and the test set. The training set is used to train the parameters of the model. The test set is used to verify the effect of the trained model, that is, to evaluate the degree of the model. The commonly used evaluation indicators are accuracy and recall. There are different classification algorithms for different classification tasks, different data, and different adaptation scenarios. Common classification methods include decision tree, Bayesian, K-nearest neighbor, support vector machine, association rule-based, ensemble learning, and artificial neural network.

3.4. Data Mining Algorithm Mathematical Formulas and Optimization. Based on calculation requirements, this paper needs to create a new input sample as follows:

$$S = \{(x_1, y_1, s_1), (x_2, y_2, s_2), \dots, (x_n, y_n, s_n)\}. \quad (5)$$

In addition, in order to ensure the fairness of calculations, this paper needs to calculate both positive and negative samples. This definition can ensure that the data in calculation can be calculated separately in two categories. This reduces the computational pressure, so the algorithm can compute twice the data in a small number of resources. For the calculation center, this paper set up the following formula for calculation and analysis. The relationship between tennis speed and center is calculated as follows:

$$m = \frac{1}{n} \sum_{i=1}^n x_i. \quad (6)$$

The movement of the tennis ball can be modeled as a point moving in x, y controlled axes. In this case, this paper can simulate the Euclidean distance in a Cartesian coordinate system, calculated as follows:

$$d(x, y) = \sqrt{K(x, y) - 2K(x, y) + K(x, y)}. \quad (7)$$

K in the formula is a kind of kernel function. In this case, this paper can get a new center-vector function by combining (2) with (3), which is expressed as

$$m_\phi = \frac{1}{n} \sum_{i=1}^n \phi(x_i). \quad (8)$$

Since there are two positive and negative areas in calculation, then this paper naturally has two center points, and the two center points can be represented as m^+ and m^- . The former is the center and the latter is the negative center. This paper can naturally get the distance between the two center points in the calculation and the distance is calculated as follows:

$$D = |x_i - m|. \quad (9)$$

This will eliminate the calculations. This paper only keeps $D' \leq D$ data for other data. In this paper, it is set as irrelevant in optimized data mining calculation for deletion. This can greatly reduce the calculation difficulty and calculation time. This paper takes the ball as the center, which will be located near the coordinates of the point of calculation and analysis on the line. The sample style is shown in Figure 5.

In this paper, a new membership function is defined, which makes the membership degree of a sample increase with the distance from the centroid, that is, the effect of the farther samples from the centroid is increased. Far support vector will get a greater degree of membership, thereby enhancing the support vector for building fuzzy support vector machine classification hyperplane effect. According to the need, the membership function is designed as follows:

$$u_i = \begin{cases} \frac{d_i^+ + \delta}{\max d_i^+}, & y = +1, \\ \frac{d_i^- + \delta}{\max d_i^-}, & y = -1. \end{cases} \quad (10)$$

This paper has completed the mathematical model of data mining calculation and the algorithm has been reasonably optimized according to the calculation needs of this article. Also, a new membership function is established. Through the above optimization, this paper has closely integrated the data mining algorithm with the ideological and political teaching to help us carry out theoretical calculations in the present big data and ideological and political education reform from the media background. For the optimized algorithm, this paper reestablishes the

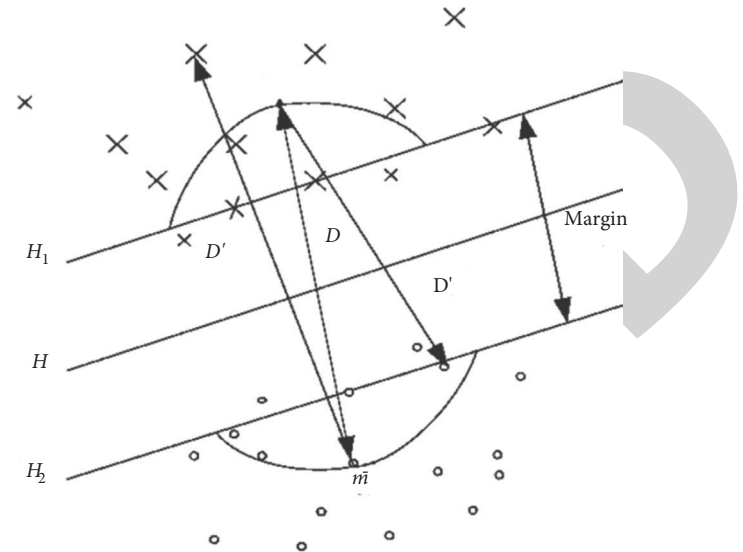


FIGURE 5: The style of the sample.

computational model of the computer. The information transfer model is shown in Figure 6.

4. Result Analysis and Discussion

This paper has completed the calculation of data mining algorithms and calculation steps and mathematical models. In addition, this paper also makes reasonable optimization on the data mining algorithm and studies the calculation points needed. In order to prove that the optimized data mining algorithm is more suitable for the calculation in this paper, this paper tests the traditional data mining algorithm and the optimized data mining algorithm in this paper. By comparing the two algorithms, the superiority of optimized data mining algorithm is proved.

First of all, this paper sets up the test environment, the experimental environment of CPU Intel i52.60 GHz, RAM 4.00 GB and MATLAB 7.13. In this paper, we use Gaussian function to test the comparison content of data mining algorithm of kernel function. Because the Gaussian function can be calculated and studied for a variety of parameters and the calculation range is wide, in line with the calculation requirements, this paper conducts a separate experiment on optimized data mining algorithm. Expressed as a straight line in the coordinate axis, the closer the data from this straight line, the more correct the data. Within the two dashed lines is calculation of allowable error line, and the data within the two dashed lines are correct and those outside the two dashed lines are wrong. This paper will calculate the results of the composition of the image shown in Figure 7.

The observation and analysis of the figure above show that there are only two points in the whole calculation result that do not exist within the two dotted lines and the rest are within two dotted lines and are basically concentrated near the straight line. This shows that after optimization, the accuracy of the data mining algorithm is very high, which is in line with calculation requirement. The error of two points

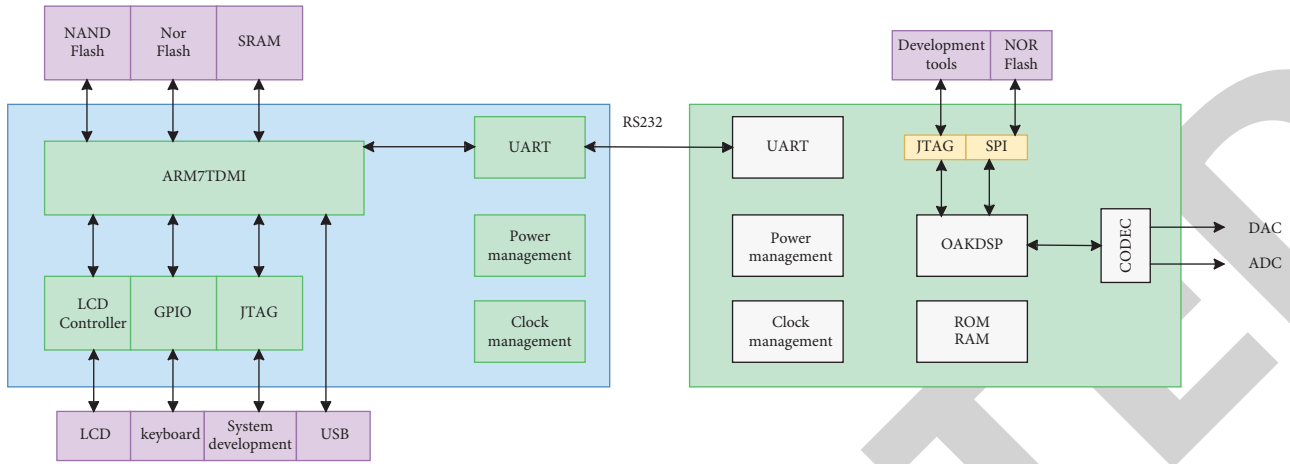


FIGURE 6: Computer model information transfer mode diagram.

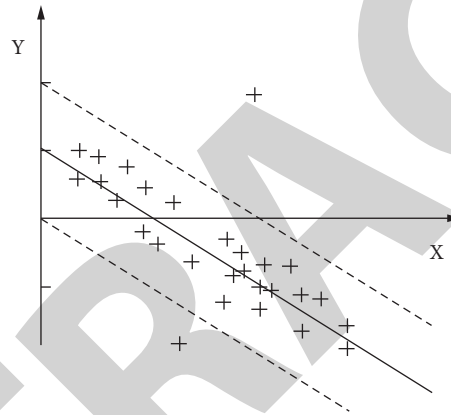


FIGURE 7: Calculation results.

does not affect the correctness of entire calculation result. Of course, no calculation of one algorithm is completely correct. There will be some mistakes. However, the calculation error rate of the optimized algorithm in this paper is obviously lower than that of other algorithms commonly used, which shows that optimization process is effective and achieves optimization goal, and the calculation effect is very good.

In addition, this paper also tests the calculation time of the algorithm. The calculation of the time is carried out by comparing the calculation time of the traditional algorithm with the optimized calculation time. This paper mainly studies the training time and classification time; the experimental group is optimized algorithm calculation group, and the contrast group is the traditional algorithm calculation group. The test results are shown in Table 2.

Table 2 shows the results of five sets of experiments. For the training time, the training time of the traditional algorithm increases rapidly with the increase of the calculation items. It is from the beginning of 4.1 seconds to 8.7 seconds, but for optimized algorithm training time, it increased from only 2.1 seconds to 2.6 seconds. For the classification time, the classification time of the traditional algorithm increased from 11.4 seconds to 18.5 seconds, a total increase of 7.1 seconds, but optimized algorithm classification time

increased from 5.2 seconds to 9.7 seconds. A total increase of 4.5 seconds calculates the rate of increase of time. The traditional data mining algorithm is twice as fast as optimized data mining algorithm. For the calculation of time, this paper has a clear contrast as shown by Figure 8.

From these two points, the computational efficiency of optimized data mining algorithm has doubled compared with the traditional algorithm, and the algorithm this paper optimized has also significantly improved. Overall, optimized data mining algorithm in this article is reasonable and can improve the computational accuracy and computational efficiency of algorithm.

5. Conclusion

With the development of the present society, young people gradually lose interest and learn patience for traditional ideological and political education. But the importance of ideological and political education goes without saying. How to sort out a new model of ideological and political education according to the development of society now is the focus of research. This paper studied the ideological and political education through the use of data mining algorithms and through testing of optimized data mining algorithm. The

TABLE 2: Test results.

Training samples	Test sample	Training time		Category time	
		Control group	Test group	Control group	Test group
200	100	4.1	2.1	11.4	5.2
400	200	5.2	2.5	12.6	6.4
600	300	6.5	2.6	15.4	7.1
800	400	7.4	2.8	16.7	8.7
1000	500	8.7	3.1	18.5	9.7

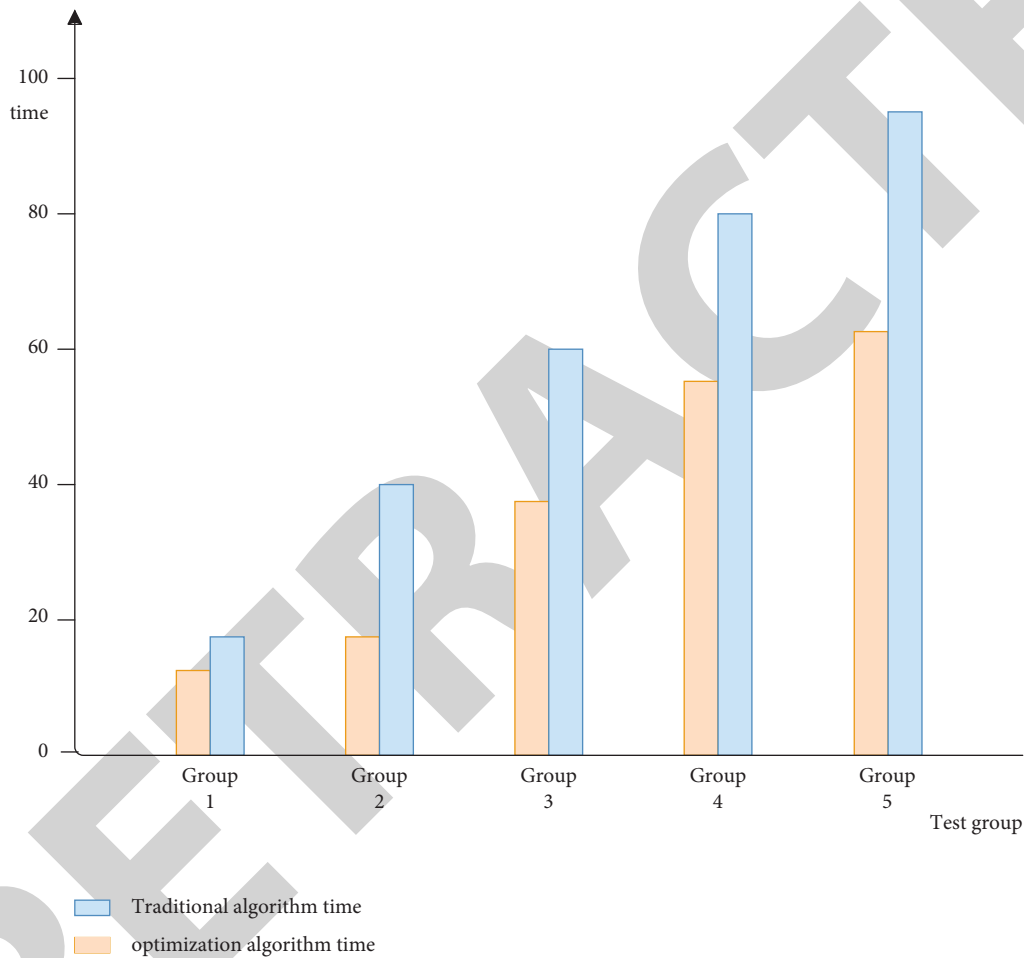


FIGURE 8: Time test results.

calculation accuracy of the optimized algorithm was very high, the calculation results were in the vicinity of the correct value, and only two points were beyond calculation range, but the error was within the allowable range. In addition, this paper also compared the calculation of time and optimized the data mining algorithm. The calculation time and calculation time growth rate are reduced to half of the original traditional data mining algorithm. This showed that optimized algorithm not only had a perfect improvement on the calculation time but also improved the calculation accuracy to a very high level, reaching more than 95% of the calculation accuracy.

However, the research of this paper is insufficient in the face of multiple abstract levels of interactive knowledge

mining. Because it is difficult to know exactly what can be found in the database, the data mining process should be interactive. Further analysis should be made to use appropriate sampling techniques for interactive data exploration.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The author declares that there are no conflicts of interest.

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