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Retraction

Retraction: The Exploration and Countermeasures of University Education Management Model Based on Big Data Technology (*J. Phys.: Conf. Ser.* **1881** 022099)

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This article has been retracted by IOP Publishing following an allegation that this article may contain nonsensical content and unreliable references [1].

IOP Publishing has investigated in line with the COPE guidelines and have found the article contains a nonsensical figure which has no significant relevance to the text and agree this article should be retracted [2].

The authors neither agree nor disagree to this retraction.

[1] https://pubpeer.com/publications/93A8664F620CB315D72B819613BCEE

[2] Feng Zhou 2021 *J. Phys.: Conf. Ser.* **1881** 022099

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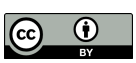

The Exploration and Countermeasures of University Education Management Model Based on Big Data Technology

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Abstract. In the context of the current rapid development of big data technology, my country's higher education management model has been greatly impacted. The reform of the student education management model in colleges and universities has both positive and negative aspects. This article makes relevant countermeasures to the transformation of college student education management mode in the era of big data, which is also one of the main research contents of this article. This article mainly discusses the teaching management mode of colleges and universities. It first introduces the changes and current situation of the education management mode, and then makes relevant countermeasures to analyze the current situation after the reform. Under this new situation, the development goals of college education management models have also changed, so a new higher-level development goal of college education management under the background of big data is outlined. This article applies the changes of big data in the education management model. The traditional education management model must be difficult to meet the actual needs of the development of the current big data era. Therefore, based on this, this article needs to combine the background of the rapid development of the current era, increase the frequency of communication between students and teachers, improve the professional quality of teachers themselves, actively innovate the theoretical needs of current education management, and establish a more professional education management team. Based on the above-mentioned problems, a combination of machine learning algorithms and electronic icon detection algorithms is proposed. Experimental research results show that there are many problems in the work of traditional university education management mode. The rise of big data has brought severe impact and challenges to it, and it also brought unprecedented opportunities to university education management.

Keywords: Big Data Technology, Education Management Model, Machine Learning Algorithm, Student Education Management

1. Introduction

Under the background of the new situation of big data, the realization of the education management function of colleges and universities requires not only advanced and professional management

methods and operating procedures, but also education managers who have modern management skills and are familiar with the laws of education. A professional team with theoretical knowledge and practical skills in education management [1, 2]. This article discusses that in the era of big data, university education managers have reflected the need for big data thinking ability in the process of educational management resource acquisition and education management; at the same time, in the educational management practice activities, education managers are also interested in informatization. Educational management models have shown different influences [3]. Therefore, in the transformation of the higher education management model in the era of big data, the interaction between the big data thinking practice of education managers and the information education management model is very meaningful [4].

Each educated object will choose course learning based on its own knowledge reserve and cognition based on its own needs, breaking the limitations of time, location, environment, and way of listening to lessons under the traditional mode of learning. In the process of education and management, students make individual arrangements for learning and implement teaching in accordance with their aptitude. With the rapid rise of various new media or social software, the scope of learning is no longer limited to textbooks, and suitable high-quality educational resources are selected through the information sharing platform, so that education can truly be popularized [5, 6]. In the context of the era of big data, the school's traditional education management model has gradually changed. On the contrary, this big data management system cannot completely match the quality of school education [7].

Under the current background of the rapid development of big data, the traditional university student education management model needs to be transformed to a certain extent, combined with current information resources, to optimize itself, so that students can receive more high-quality education Resources [8, 9]. And students can also formulate a corresponding reward system, which can also effectively improve the enthusiasm of teachers' work and promote the smooth development of teachers' work. This outdated education management model will cause certain restrictions on the quality of current university teaching, and even affect the enrollment of the school itself [10].

2. Method

2.1 Algorithms in Education Management Mode

2.1.1 AdaBoost algorithm. First learn to get the initial processor:

$$T_m(x): X \to \{-1, +1\}$$

$$e_m = P(T_m(xi) \neq yi) = \sum_{i=1}^{N} wmiexp\left(-a_m yiT_m(xi)\right) \quad (1)$$

Calculate the coefficient of Tm(x):

$$a_m = \frac{1}{2}\log\frac{1-e_m}{e_m}$$

$$D_{m+1} = (S_{m+1}, 1, \ldots, S_{m+1}, i, \ldots, S_{m+1}, M) \quad (2)$$

$$S_{m+1,i} = \frac{S_{mi}}{Z_M}\exp\left(-a_m y_i T_m(x_i)\right), (i = 1,2, \ldots, M)$$

After completing the above steps, construct a linear combination of classifiers:

$$\mathrm{f(x)} = \sum_{m=1}^{M} a_m T_m(x) \quad (3)$$

The final data cloud processing:

$$\mathrm{T(x)} = \mathrm{sign}\left(\mathrm{f(x)}\right) = \mathrm{sing}[\sum_{m=1}^{M} a_m T_m(x)] \quad (4)$$

2.2 SIFT Feature Point Generation

The Gaussian scale kernel can define the scale space of the image using the convolution operation of the original image and a variable-scale two-dimensional Gaussian function:

$$L(x, y, \sigma) = G(x, y, k\sigma) * I(x, y) \quad (5)$$

Where: G(x, y, k, σ) is the Gaussian function with variable scale; I(x, y) is the original image; k is the amount of scale change.Different Gaussian difference kernels and image convolution are generally used to generate Gaussian difference space:

$$D(x, m, \sigma) = G(x, m, s\sigma) - G(x, m, \sigma) * I(m, y) = P(x, m, k\sigma) - L(x, m, \sigma) \quad (6)$$

For the detected feature points, calculate the neighborhood gradient histogram and determine its main direction. It should be noted that some feature points not only have main directions but also auxiliary directions, which are very important for the stability of subsequent matching.

2.3 Basic Principles of PCA

The mathematical principle of PCA is as follows: Suppose an n-dimensional vector w represents a mapping vector in the low-dimensional mapping space. After maximizing the data mapping, the variance formula can be obtained as:

$$\max_w \frac{1}{m-1}\sum_{i=1}^{m}(w^T(x_i - \overline{x})^2) \quad (7)$$

$$\min_w tr(W^T AW)$$

$$s, t, W^T W = I \quad (8)$$

Where: tr is the trace of the matrix; A is the covariance matrix. The A expression is as follows:

$$A = \frac{1}{m-1}\sum_{i=1}^{m}(x_i - \overline{x})\,(x_i - \overline{x})^T \quad (9)$$

PCA is the output, which can be represented by Y=W'X. The optimal W is the eigenvector corresponding to the first k largest eigenvalues of the data covariance matrix as a column vector, and the original dimension of X is reduced to k dimensions. .

2.4 The Establishment of a Priori PCA Algorithm

First, through the Lagrangian multiplier method, the above data processing can be transformed into an equivalent unconstrained optimization problem:

$$\max_\omega \omega^T \sum \omega - \alpha_1(\omega^T - 1) - (\omega^T \mu - 0) \quad (10)$$

To further optimize the maximum value of the above problem, the maximum projection direction in the orthogonal space is:

$$\max_\omega \omega^T \sum \omega$$

$$\text{s.t.}\ \omega^T\omega = 1, \omega^T\mu_1 = 0, \omega^T\mu = 0 \quad (11)$$

Generally speaking, a priori direction and a principal direction are searched for the largest projection direction in a space orthogonal to the above k vectors:

$$\max_\omega \omega^T \sum \omega$$

$$\text{s.t.}\ \omega^T\omega = 1, \omega^T\mu_1 = 0, \omega^T\mu = 0, i = 1, \ldots, k-1 \quad (12)$$

From the Lagrange multiplier method:

$$\max_\omega \omega^T \sum \omega - \alpha_k(\omega^T - 1) - (\omega^T\mu - 0) - \beta_1(\omega^T\mu_1 - 0) - \cdots - \beta_{k-1}(\omega^T\mu_{k-1} - 0) \quad (13)$$

3. Establishment of Educational Management Classification Model and Experimental Research Design

3.1 KNN Text Classification Model

Use text classification algorithms to classify documents. In 1968, Cover and Hart proposed the KNN algorithm. KNN is one of the classic classification methods. It has the advantages of simple implementation and high robustness. It adopts the calculation method of cosine similarity, so that the smaller the angle between the two vectors, the higher the similarity. The calculation formula of cosine similarity is as follows:

$$\cos\theta = \frac{a\cdot b}{\|a\|\cdot\|b\|} = \frac{\sum_{i=1}^{n} A_i B_i}{\sqrt{\sum_{i=1}^{n} A_i^2}\sqrt{\sum_{i=1}^{n} B_i^2}} \tag{14}$$

3.2 Multi-Objective Constraint Model Establishment

The problem described in this article meets the following assumptions:

a) The user knows the type of the submitted task and its subtasks, and the type and time of resources required by the subtasks;

b) Some subtasks of a mission need to be executed on the same satellite;

c) Each subtask can be processed on any satellite in a subset of available resources;

d) The execution order between subtasks can be serial, parallel or mixed mode;

The multi-objective constraint model of the resource allocation system is:

$$\begin{aligned} &\text{Min}\left\{\text{f} = \max_{1\le k\le m}\max_{1\le i\le n} \text{T}_{ik}\right\} \\ &\text{Min}\{\text{f}_2 = \text{PIN}\} \end{aligned} \tag{15}$$

We first normalize the function to calculate the dimension and use the linear weighting idea to construct the multi-objective model into a single-objective model. Specifically expressed as:

$$\text{Min}\{\text{f} = \text{w}_1\text{f}_1^{\text{s}} + \text{w}_2\text{f}_2^{\text{s}}\} \tag{16}$$

$$P(C_i|X) = \frac{p(\text{C}_i)\text{p}(\text{X}|\text{C}_i)}{\text{p}(\text{X})} \tag{17}$$

The estimated value can be obtained according to (18).

$$\text{P}(\text{X}|\text{C}_i) = \prod_{i=1}^{m} P(f_i|C_i) \tag{18}$$

Finally, the sample point X is mapped to the category with the largest posterior probability, namely:

$$g(X) = \text{argmax}_{1\le i\le n}\, P(C_i|X) = \frac{p(\text{C}_i)\text{p}(\text{X}|\text{C}_i)}{\text{p}(x)} \tag{19}$$

3.3 Experimental Research Objects and Research Design

In order to be able to further analyze the education management technology of colleges and universities under big data technology, this paper first selected 70 students from the Institute of Economics and Trade to conduct a practical survey, and divided them into two classes using the method of comparison, with an average of 35 students in each class. In addition, the experiment, in order to be able to understand more precisely the way big data technology is used for college education management, analyzes the current situation of practical education management mode in colleges and universities, and summarizes the existing problems.

Secondly, check the relevant literature to find out the current situation of the problem and the common problems and causes of domestic colleges and universities. This article takes the the Institute of Economics and Trade as an example, combines theoretical research with practical operations, and finds out the characteristics and shortcomings of current university practical education management

under big data technology. This article adopts a research and analysis method that combines theory and actual cases. Based on the analysis of the thinking changes and work transformations brought by big data technology to the field of college student education management, the theory is applied to practice, the current situation of the problem is deeply analyzed, and the big data is explored. Under the background, the countermeasures of the reform in the field of college student education management, and discuss the practical changes of college education management cases after the use of big data theory, so as to truly integrate theory with practice.

4. Results

4.1 Validity Experiment of Adaboost Algorithm

The main purpose of this article is to first verify the efficiency of the Adaboost algorithm. The experiment in this article first derives data from the original experimental database. By selecting the the Institute of Economics and Trade as the research object, the effective number of their data is 120 and 125. Data The attributes of is distributed between 6 and 8. The types of these data are all 5, so as to record the process of Adaboost algorithm on the two data sets Ag and Dis, M. The experimental data are shown in Table 1 and Table 2. recording.

Table 1. Table of data sets Ag, Dis and M

	1	2	3	4	5	6	7	8
Dis	5.56	6.31	8.21	12.31	12.03	12.12	19.32	39.21
Ag	0.71	0.675	1.13	1.27	1.52	1.65	1.73	1.82
M		11.23	17.25	23.17	23.29	12.59	19.67	21.53

Table 2. List of Ag, Dis and M of the ZF data set

	1	2	3	4	5	6	7	8
Dis	453.2	431.56	577.34	672.31	898.28	1159.23	1543.62	1907.24
Ag	73.22	65.78	155.27	152.68	155.35	171.53	157.79	240.53
M		1.245	3.775	5.729	4.890	5.675	6.251	6.213

In this paper, in order to be able to perform more refreshingly, except for the change in the data value of $\log_2 M - \log_2 M_0$ of the evaluation value M during the clustering process, it is represented by a line chart, as shown in Figure 1:

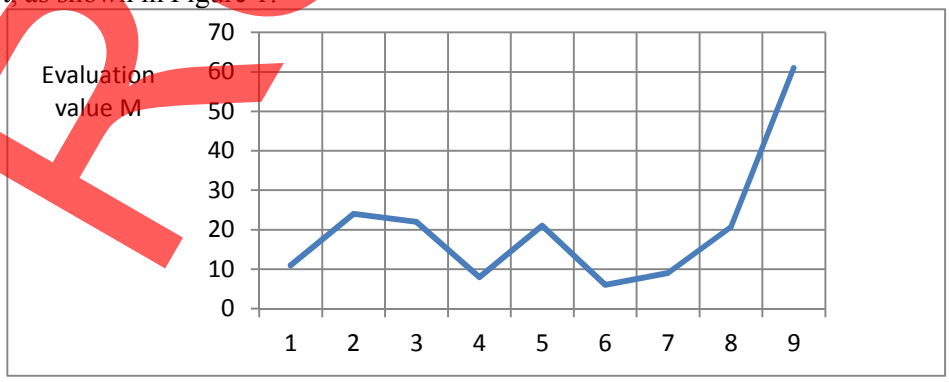

Figure 1. The trend diagram of the evaluation value M during the clustering process

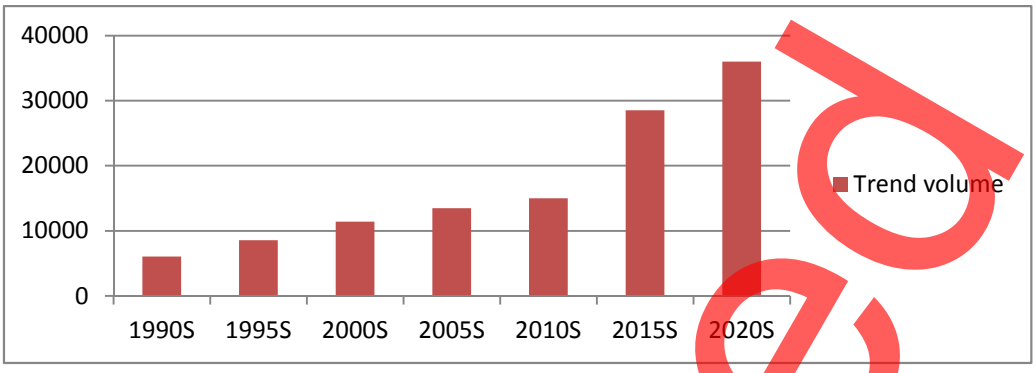

Figure 2.1990-2020 Educational Management Trends in Colleges and Universities

From the above picture, we can see that the educational management theory started in 1960 and the educational management theory papers were released from the very beginning to more than 5,000. However, it is obvious that the number of papers from 2010 to 2015 has increased rapidly. This is also officially under the rise of the era of big data, many scholars have participated in the research of this educational management theory. After 2020, with the era of big data and the wide application of big data, the speed of development will increase.

4.2 Building a Big Data Experimental Education Management Platform

The big data education management platform is a teaching profession and institution specially set up in order to adapt to the changes of the times, and it has obtained the country, and the construction of a big data education management platform is of great benefit to the cultivation of high-tech talents. As an institution, the Big Data Institute's role is to play an integrated role, achieve complementary advantages, and achieve professional education, professional research.

5. Conclusion

The development of educational management theory has also developed rapidly. From the immaturity at the beginning of the 20th century to the more and more perfect development now, under the continuous progress of this society, education management the theory has been successfully transformed across the ages and meets the requirements of modern educational management theories. However, we must not be satisfied with the current needs. We must constantly change ourselves and discard all the past theories that cannot meet contemporary needs. Looking for some new methods and new educational theories. The new management theory will always be more complete and better than the old one. We increase the direction and want to develop a more efficient and standardized educational management theory.

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