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Deep Mining Technology of Database Information Based on Artificial Intelligence Technology

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ABSTRACT

The database is the core of the information management system. When there is no modern management tool such as enterprise information management system, the status of enterprise resources and the direction of adjustment are unclear, and it is quite difficult to make adjustment arrangements. In order to improve the information mining ability of enterprise database in the future, this paper combines intelligent optimization technology under artificial intelligence technology with information mining technology, and compares its information mining ability with traditional technology. The research results show that after using the intelligent optimization algorithm, the maximum mining times can reach 60 times/min, while the maximum mining times of the traditional algorithm is 33 times/min. This shows that the mining speed of the intelligent optimization algorithm used in this paper is much higher than that of the traditional algorithm. And the mining speed of enterprises transformed through intelligent optimization is nearly 40% higher than that of traditional algorithms.

KEYWORDS

Artificial Intelligence, Database Information, Deep Mining, Intelligent Optimization

1. INTRODUCTION

Artificial intelligence (AI) technology has been used widely in the Internet field, and a database has become an important source of information. With the rapid development of computer applications, the development of information technology has brought people into an era of information explosion. Information technology has profoundly changed people's work and lifestyle, prompted changes in people's ideas, promoted scientific and technological progress, and accelerated industrial transformation. The development of computer software and application technology facilitates data processing. Data-driven data mining techniques have become a new field of research in AI, where the model used for data is not permanently related except for real-time data. The focus and complexity of information technology research have changed accordingly, and how to use this kind of big data in its valuable in-depth information and in-depth data analysis has become the focus of information research.

For information depth mining, Liu proposed a heuristic device to auto-determine the optimal number of screens to review. The experimental results of the simulation signals indicate the efficiency

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of the elastic signal proposed for the normal course of the LMD. Finally, the proposed method extracts configuration information for gear error analysis (Liu, Zuo, & Jin, 2017). Jin introduced information mining information from big data users to help design the product. He explained large-scale user data export research from multiple perspectives, such as data collection, location recognition, feature recognition and emotional analysis, thought collection, and sampling (Jin, Liu, & Ji, 2019). Wu proposed the application of world-class diversity equations to information mining based on user feedback. Hybrid mining algorithms avoid the weaknesses of an algorithm, which facilitates the identification and recognition of users' ideas efficiently and effectively (Wu, 2020). Qian proposed a basic approach to information abstraction based on the hazard matrix method, analyzed wheat flour processing, and applied it to practical mining ecosystem exploitation. Compared with the existing system, this approach can achieve the trajectory of the production process by combining different levels of raw materials, production levels, and final products from the system (Qian, Song, & Wang, 2019). As the amount of information increases, information mining cannot further meet people's needs. AI is hoped to address this problem.

AI has developed rapidly in recent years and has attracted the attention of many scholars. For AI applications, Hassabis explored the historical interaction between the fields of AI and science and highlighted current developments in AI. These developments are supported by research on nerve compression in humans and other animals (Hassabis, Kumaran, & Summerfield, 2017). Fei examined applications of AI in healthcare in detail. Its three main areas were early detection and detection, treatment and result prediction, and evaluation of prognosis. The paper discussed pioneering AI programs, such as IBM Watson, and barriers to the development of AI in real life (Fei, Yong, & Hui, 2017). Krittanawong referred to AI as a field of computer technology that aims to mimic human thought processes, training possibilities, and knowledge storage. The paper described the application of AI in cardiovascular therapy and discussed its possible role in developing the cardiovascular system (Krittanawong, Zhang, & Wang, 2017).

In the present study, the intelligent optimization algorithm under AI technology is combined with the deep mining technology of database information, breaking through traditional mining technology's limitations. An intelligent optimization algorithm, also known as a modern heuristic algorithm, is an algorithm with global optimization performance and strong universality suitable for parallel processing. By comparing the intelligent optimization algorithm with traditional information mining, this study finds that the mining speed of the traditional algorithm is generally 30 times per minute. The mining speed of the intelligent optimization algorithm is approximately 50 times per minute, and the screening accuracy rate of the traditional system is approximately 0.43. The accuracy rate under the intelligent optimization algorithm is approximately 0.85, showing that the intelligent optimization algorithm used in this study can play a key role. This study can provide a new idea for improving database information deep mining technology and offer a new research direction for applying AI technology. The innovation of this study lies in the combination of AI technology and database information depth mining technology, which is novel in perspective and complete in content. The experiment also has significant research value.

2. DEEP MINING METHOD OF DATABASE INFORMATION

2.1 Information Depth Mining Technology

2.1.1 Database Information

Database design technology is developing rapidly in China and has been valued and promoted by many enterprises. The database is a "warehouse that organizes stores and manages data according to the data structure" and is also a collection of large amounts of organized, shareable, and uniformly managed data stored in the computer for a long time. Although China's database design technology has made great progress, a big gap is found between China's database technology and developed

countries in terms of the design effect of the database system and the use of database technology. Database technology is one of the fastest-growing and most widely used websites in computer science and technology (Zhai, & Di, 2019). With the increasing automation of information management, data technology has become an integral part of modern information technology. A data center must be designed when creating an enterprise information management system for a company (Syam, & Sharma, 2018). Given the data scale's continuous improvement, the data system's data scale continuously grows in size and complexity, and data security and performance requirements increase. Database design is critical in making application information systems work efficiently, accurately, and securely. The design content of database design includes requirement analysis, conceptual structure design, logical structure design, physical structure design, database implementation, and database operation and maintenance.

Given that traditional relational, object, and other database store static data, the data in these data systems are also stable. Some related systems must be adopted to reflect the development of objects in the real world through the data changes in the data system (Taddeo, & Floridi, 2018; Kermadi, & Berkouk, 2017). For example, in a related data management system, users can add data such as datetime records to define the time characteristics of specific applications and record the development and changes of items in the data system. However, such storage systems and time-based data management capabilities are extremely limited and may not meet real-time requirements (Nasiri, Khosravani, & Weinberg, 2017). The preliminary formulation of the enterprise information resource management system includes several modules, including R&D management, procurement management, financial management, marketing management, administrative management, production management, and basic information. Each module can add multiple sub-modules as needed. It decomposes control responsibilities according to the organizational structure of project management. The management of progress is generally divided into three levels. The board of directors decides the first-level management for the first-level progress. The general manager is responsible for the plan reporting, execution, and control of the first-level progress and assumes overall leadership responsibility for the project progress. When a problem emerges with the first-level progress, the general manager is responsible for reviewing the reasons, verifying the measures, and making recommendations to the board of directors. Changes to the Tier 1 schedule must be approved by the Board of Directors. The Engineering Department/Planning Control Department shall undertake specific implementation and management responsibilities for the first-level progress control of the project and carry out predictive management and advanced control over implementing the first-level schedule. When risks are foreseen, reports are timely, reasons are analyzed, countermeasures and suggestions are put forward, and the general manager approves before implementation.

At present, informatization construction reflects the development culture of "data center, business integration, flat management, and scientific decision-making." Information construction refers to various practical work that uses information construction to serve economic construction under the condition of informatization. Its basic requirement is expanding information, and the condition is that there must be a certain economic foundation. To improve product and international competitiveness, many companies put forward the idea of establishing a data mining system based on historical and business data accumulated over the years, such as mobile communication and postal banking. Before proceeding with data mining, the problems that data mining needs to solve and the predetermined goals that need to be successful should be clear. The function of data mining has direction only with well-defined support.

Traditional data management systems are incompatible with most modern applications because of the inability to find deep information in large amounts of data (Hashimoto, Rosman, et al., 2018). In the field of new technologies such as microsensors, the use of data by many companies is also at the basic level of browsing, retrieval, query and application, aggregation, and selection. The sensor is a kind of detection device, which can sense the measured information and transform the sensed information into electrical signals or other required forms of information output according to certain

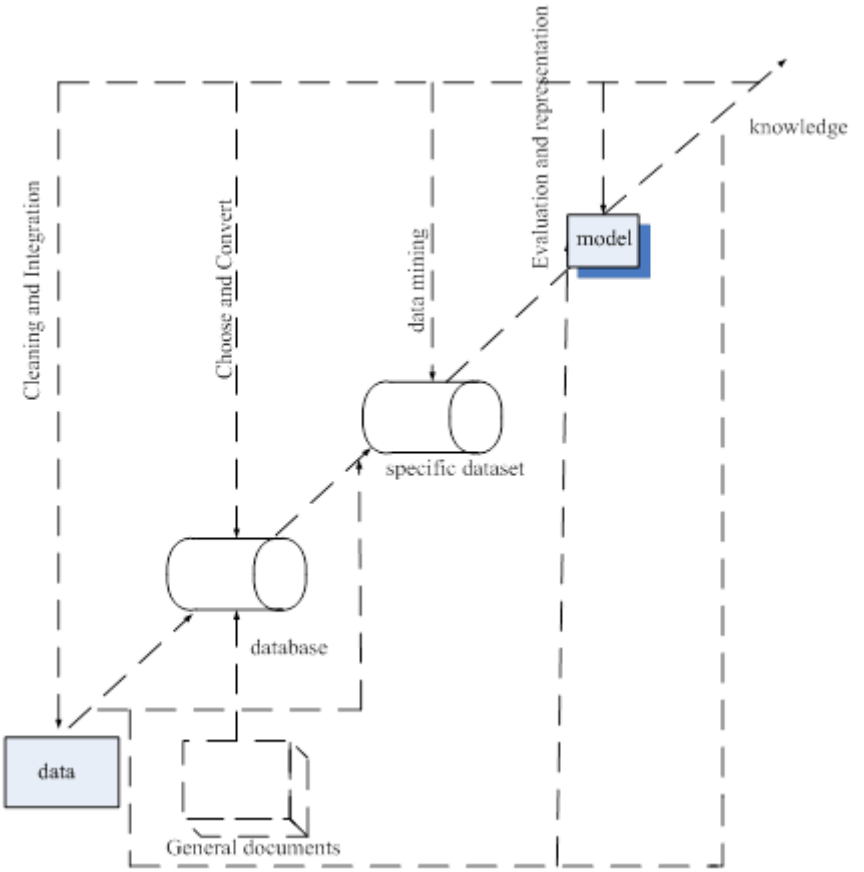
rules to meet the requirements of information transmission, processing, storage, display, recording and control. It cannot further change this data (Hurlburt, 2017). Therefore, how to manage big data in enterprise databases more efficiently and increase the utilization of data sources at an advanced level of knowledge enhancement has become a speed problem that enterprises must immediately solve. Applying data mining technology can help enterprises to solve this problem better.

2.1.2 Data Mining

Data mining refers to the non-trivial process of revealing implicit, previously unknown, and potentially valuable information from a large amount of data in a database. The data mining process model mainly includes defining the problem; establishing a data mining database; analyzing data; preparing data; and establishing, evaluating, and implementing the model. Knowledge discovery involves identifying useful, innovative, empowering, and ultimately understanding from a large amount of data after it has been collected. It is an advanced stage of cognitive abstraction using data collected from a macro perspective (Qin, Yao, et al., 2018). Using data mining techniques can help a company's decision-makers weed out useless information directly from numerous customer data sources to use this knowledge to make training decisions. The data mining steps are shown in Figure 1.

The first is the design of the algorithm: determining the type of data mining methods to be used, such as data collection, customization, grouping, grouping rule analysis or process analysis. Then,

Figure 1. Data mining steps



the algorithm is chosen for this mining method, directly affecting the quality of the mining process. Once the above preparation is done, the data mining algorithm module can be implemented.

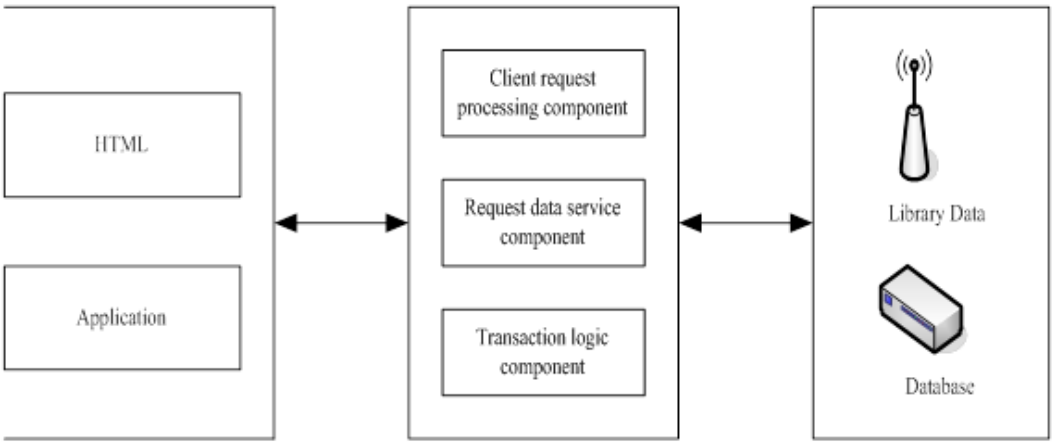
The exported information is analyzed according to the decision of the end user, and the most valuable information is derived (Gao, Chen, & Huai, 2019; Wu, Yu, & He, 2019). Users or devices should consider programs detected at the data mining level. Unintentional or irrelevant programs should be removed. It uses new data transformation methods, defines new parameter values, and even employs other data mining algorithms. Data mining algorithms are a set of heuristic methods and calculations for creating data mining models based on data. To create models, the algorithm will first analyze the data you provide and find specific patterns and trends.

Considering the above reasons, this program adopts a three-level model. It assigns tasks to individual units for completion and executes at the transaction level; it is responsible for receiving data in a format suitable for that level of data. The system structure is shown in Figure 2.

2.2 Artificial Intelligence

AI is a new technology science that researches and develops theories, methods, technologies, and application systems for simulating, extending, and expanding human intelligence. AI is widely used in various fields, such as science fiction, architecture, and social life. It has received a great deal of attention from academia and industry. Traditional intelligence refers to such new methods proposed by humans that are supported by biological laws and wonders of nature. These methods are always applied through human exercise and other cognitive behaviors. Compared with traditional methods, AI technology has better exercise capabilities. It usually does not require knowledge of complex systems to solve many complex problems. It mainly includes artificial neural network, fuzzy logic, intelligent optimization algorithm, and other methods. Artificial neural network is a nonlinear and adaptive information processing system composed of many interconnected processing units. It is proposed on the basis of modern neuroscience research results and attempts to process information by simulating the way of brain neural network processing and memorizing information. The intelligent optimization algorithm is suitable for dealing with sparse gradients. The parameter with the largest partial derivative of the loss correspondingly has a rapidly decreasing learning rate, whereas the parameter with a small partial derivative has a relatively small decrease in the learning rate, which is suitable for studying the depth of information. This paper mainly introduces the role of intelligent optimization algorithms in deep mining.

Figure 2. System structure diagram



An optimization problem is choosing the best solution from a finite or infinite number of decision solutions. Optimization problems must be solved in almost all human social activities, especially in engineering design, economics, statistical physics, management science, computer science, and many other fields.

With the continuous research on optimization algorithms and the understanding and support of creative or natural phenomena, some experts have proposed a class of optimization algorithms. Such intelligent optimization algorithms are as sophisticated as the best traditional algorithms in science. In practical applications, such algorithms generally do not have specific requirements for advanced and empty working purposes and constraints. It can be well-optimized even without text. Moreover, this optimization algorithm strongly transforms uncertainty during the calculation process. Thus, the focus on cognitive improvement algorithms is increasing.

The calculation process of the intelligent optimization algorithm is as follows. We send the sample input to the hidden layer through the connection weight. The input and output of the hidden layer unit are as follows:

$$u_i^l = \sum_{m=1}^{M} w_{mi} x_{km} \tag{1}$$

$$v_i^I = f(\sum_{m=1}^{M} w_{mi} x_{km}) \tag{2}$$

The input and output of the output layer are as follows:

$$y_{kj} = v_j^J = f(\sum w_{ij} v_i^I) \tag{3}$$

It adjusts the connection weights and corrects the connection weights between all neurons in the output layer neighborhood $N_g(t)$ and the input layer neurons:

$$\bar{W}_{ji}(t+1) = \bar{W}_{ji}\left(t\right) + \eta\left(t\right) * \left[\bar{P}_i^k - Wji\left(t\right)\right] \tag{4}$$

If the cost function is less than a certain threshold ε or the change of the cost function during two iterations is less than a certain threshold β, the algorithm stops, and the cost function is as follows:

$$J(U, v_1, ..., v) = \sum_{i=1}^{c} J_i = \sum_{i=1}^{n} u_{ij}^m d^2(x_i, v_j) \tag{5}$$

The classification function that maps to a higher dimensional space can be rewritten as follows:

$$g(x) = w^t \theta(x) + b \tag{6}$$

The above equation can be rewritten as follows:

$$\begin{cases} \max\limits_{a} & \sum\limits_{i=1}^{n} a - \frac{1}{2}\sum\limits_{i=1}^{n}\sum\limits_{j=1}^{n} a_i a_j y_i y_j \\ s.t. & \sum\limits_{i=1}^{n} a_i y_i = 0, ai \geq 1,2,...,n \end{cases} \tag{7}$$

A function records the input values in the low field space and calculates the internal product of the high-density field photographed:

$$K(x_i, x_j) = \theta\left(x_i^t\right)\theta\left(x_i\right) \tag{8}$$

Function K is called the kernel function.

For non-linearly separable training vectors, it can be extended by modifying the following equation:

$$\left(W * x_i\right) + b \geq 1 - \gamma \quad y_i = 1 \tag{9}$$

$$\left(W * x_i\right) + b \leq -1 + \gamma \quad y_i = -1 \tag{10}$$

With the advent of data mining, AI, virtual networks, expert systems, and machine learning, computing requires more than just computational work on compressed data. Machine learning is an interdisciplinary subject involving probability theory, statistics, approximation theory, convex analysis, algorithm complexity theory, and other disciplines. It also processes unstructured data, such as many complex objects, and images, which give critical judgment and informed advice. People are demanding complexity and understanding of information systems. More computers are expected to practice human thinking and use knowledge and experience to analyze, judge, and process intelligent information systems.

Although the information management system has not yet been clearly positioned, its development as an information management system is unstoppable. Thus, computer design, IT development, and project management are constantly evolving. IT connects different equipment through the wide area network of computer networks, speeds up the transmission speed of information and broadens the access to information, promotes the development of various software applications, and changes people's life and learning styles. The information management environment emphasizes the coordinated response of the management system to the actual needs; the scientific concentration; and the collection, analysis, and acquisition of the knowledge of the project information. On the one hand, it enhances the available project experience to guide the project's continuity. On the other hand, it makes the complete part of the project an effective guide for existing and future parts. The development of intelligent information management systems will change the project management system.

This system selects data center integration and repository data sources as the evolving technical management information system. It is itself large-scale, multidisciplinary data. The general model of an advanced information mining system is as follows.

To store and generate relevant subject data, data are derived from different parts of the source data, including billing, schedule, quality, text, data, images, and design and scoring rules obtained from the multi-contract information management system. Then, after cleaning, merging, and modification, differences in the characteristics and characteristics of the data are eliminated. It is then adjusted for granularity and size, enabling overloading for multiple types of data. In domain fields, generic data

(scalar data, mass data, and aggregate data) can be provided, which is fine-grained and embedded data of high quality and uniformity. The technical information management system contains many unstructured data information, such as technical contact documents, technical reports, tasks, and related plans. Related non-essential information particles are solved by swarm algorithm and rules. Swarm intelligence algorithm is a new evolutionary computing technology, which has become the focus of many researchers. It has a very special relationship with artificial life, especially evolutionary strategies and genetic algorithms. The programming capabilities in structured data are critical here.

3. EXPERIMENTAL DATA

3.1 Data Sources

We take an enterprise in city A as an example to mine and analyze the information of the enterprise's archive database. Enterprise files mainly refer to the personal information files of enterprise staff. It contains the basic natural information of the individual (name, gender, and ID number), as well as data related to the individual's study and employment experience (education certificate, award certificate, and employment contract). To realize the effective management and efficient storage of a large amount of data in enterprise archives, this study is mainly based on the data mining theory of intelligent optimization algorithm under AI to realize the code optimization of traditional database information programs. It improves the storage and management efficiency of database data:

1. Enterprise file data classify the key attributes of each target data, such as nominal properties, binary properties, numerical properties, ordinal properties, and other key properties. It realizes the effective screening and analysis of a large amount of data and can improve the execution efficiency of programs, such as database queries.
2. In the database of a large number of enterprise archives data, the screening of target data needs to rely on the strategy of classification screening. It can obtain a more reasonable set of results and improve the success rate of data screening.

3.2 Comparison of In-Depth Information Mining

3.2.1 Mining Efficiency

We first compare the information mining efficiency of different algorithms. We select the mining speed of different algorithms within 1 hour and obtain the mining speed of different algorithms by calculating the average mining speed per minute. The results are shown in Figure 3.

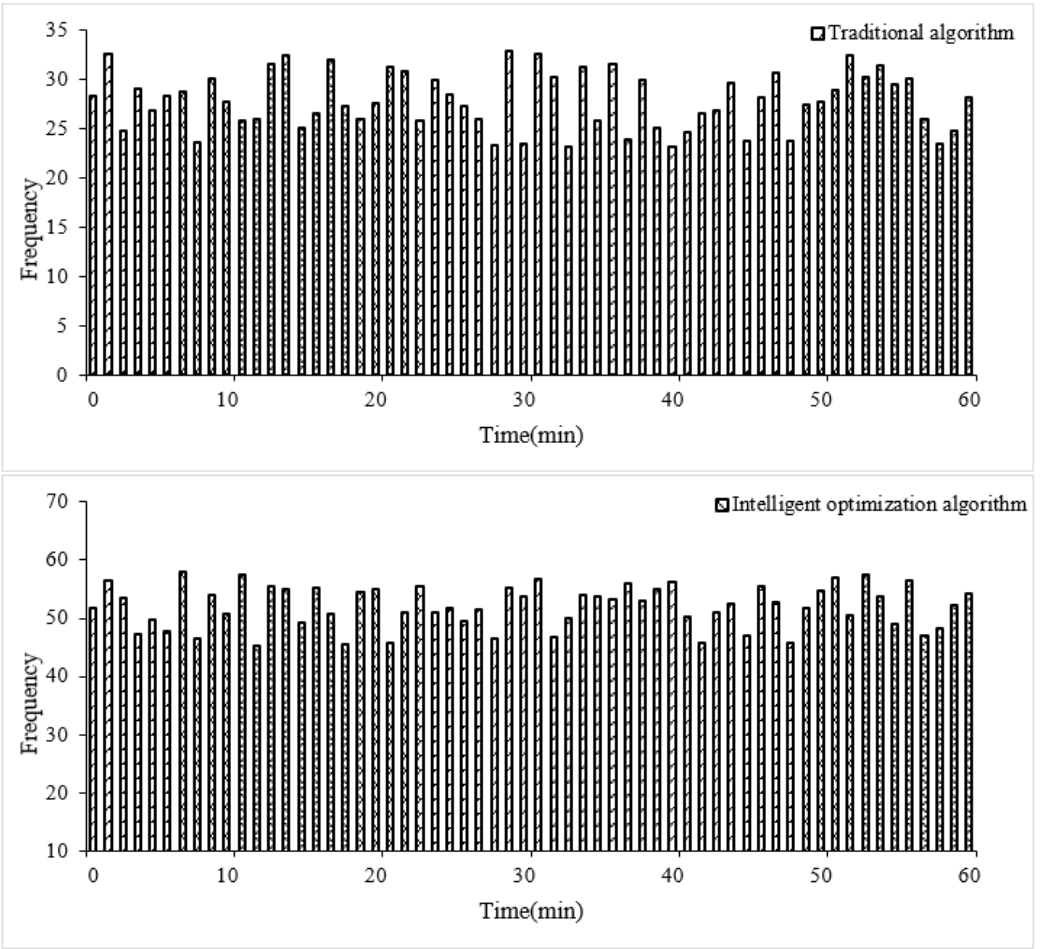
The figure shows that the mining speed of the traditional algorithm is generally 30 times/min, and the frequency of fluctuation is small. In this study, the intelligent optimization algorithm is used to mine the mathematical library information at approximately 50 times per minute, and the mining speed is nearly 40% higher than that of the traditional algorithm. After using the intelligent optimization algorithm, the maximum number of mining times can reach 60 times/min, whereas the maximum number of traditional algorithms is 33 times/min. Therefore, the mining speed of the intelligent optimization algorithm used in this paper is much higher than the traditional algorithm.

3.2.2 Screening Success Rate

In addition to being excellent in speed, a good system is also critical to its screening success rate. This study compares and analyzes the data screening success rate of the system constructed, and the results are shown in Figure 4.

The comparison in Figure 4 shows that, in terms of screening accuracy, the screening accuracy of the traditional system is approximately 0.43, and the highest accuracy is approximately 0.8. However, in 80 tests, an accuracy of approximately 0.8 did not appear often. In this study, the screening accuracy

Figure 3. Mining speed comparison



rate under the intelligent optimization algorithm is approximately 0.85, the highest is 0.98, the accuracy rate is maintained above 0.85 for a long time, and the stability is high.

In the test, when the content of the instance database is increased and the association rule mining is performed, the decision tree is read into the memory, and the incremental part of the instance database is mined. The results are shown in Table 1.

The experimental results show that the speed of the intelligent optimization algorithm is faster than that of the traditional algorithm. With the increased amount of data, the advantage of the algorithm is more obvious, and the operation speed is increased more times. When the number of instances reaches 123102, the execution time of the intelligent optimization algorithm is accelerated by 529.95% compared with the traditional algorithm, proving the feasibility and practicability of the improved algorithm.

After optimizing the database index, this study monitors the database. The results obtained after executing the same query statement as before without optimization under the same circumstances are shown in Table 2.

The table shows that the query efficiency of the database is significantly improved after index optimization. It significantly reduces disk scan time and the amount of data read. The scan time is

Figure 4. Screening accuracy comparison

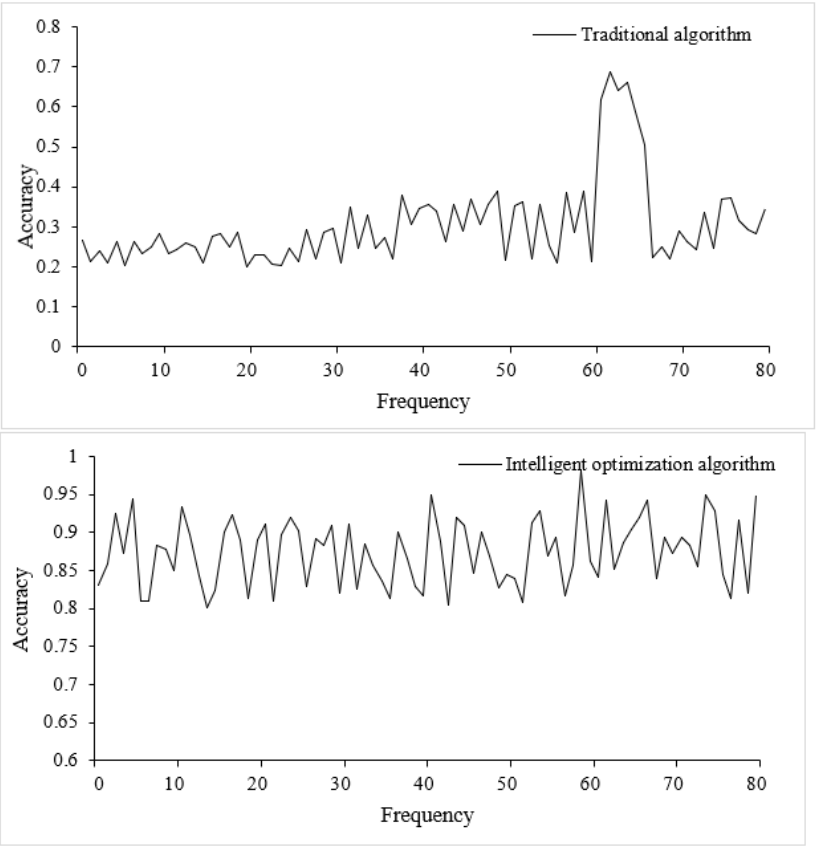


Table 1. Time comparison of different algorithms

Experimental data	Number of instances	Traditional algorithm execution time	Intelligent optimization algorithm execution time
1	301	0.27	0.11
2	4818	2.47	1.59
3	42175	17.68	9.04
4	123102	135.44	21.5

Table 2. Index optimization statistics

	Before optimization	After optimized
Total CPU usage time	25723	17544
Total reads	350895	316654
Total writes	9071	3869
Total execution time	91184276	20889146

reduced by 46.62%, and the amount of data read is increased by 134.45%. The query efficiency also reduces the number of writes when performing data analysis calculations. Therefore, the occupied time of the disk CPU and the total execution time of the query are greatly reduced, and the performance of the database is greatly improved.

4. DISCUSSION

The article completes the overall design of the enterprise archives management information system based on data mining. According to the business analysis of enterprise archives management, the study analyzes the data of archives storage management, borrowing management and other business work. Combined with the C# technical route of system development, this study completes the design of the overall program architecture of the system. According to web architecture, this study completes the overall design of the hardware and software platform architecture of the enterprise archives management information system. The web is a global wide area network, also known as the World Wide Web. It is a global, dynamic interactive, cross platform distributed graphic information system based on hypertext and HTTP. It completes the database storage design of the enterprise file management information system of the database management system.

Objectively recorded application data are modified through a single expression, identification, and search, consistent with data management. Data impact decision-makers, and the value-added and modification of information is related to information management. Generally speaking, information management is carried out from a combination of management and technical aspects. The method of promoting innovation combined with management domain knowledge helps relevant knowledge management emphasize sharing knowledge and refining industry wisdom.

Traditional data processing standard analysis and custom data processing standards take product model as the basis of data structure, and the product model becomes the link connecting a large amount of project management information. The description of the construction process is more in line with the description of the project and is, therefore, more suitable for guiding the creation of a project management system or a document file management system. At the same time, the model does not specify the project location, the entire project should be implemented around the location, and the project management division of labor is clear. Therefore, the classification of data by management services is more in line with the needs of data users.

In addition to technical databases that respond to the daily work of the project, intelligent management systems often appear in databases, such as knowledge bases, model bases, and methodologies. They can gain access to new data, ideas, or decisions that help individuals solve real-world problems more efficiently. They are represented by expert programming, decision support, and other technologies. However, from the perspective of practical application, most expert programs and decision support programs are knowledge-based; the expert knowledge base needs to be simulated, constructed, and maintained; and the understanding and completion of its application is limited. Therefore, the aging material technology has certain difficulties. However, with the rapid development of data storage and data mining technology, this problem can be gradually improved.

5. CONCLUSION

A good information technology system should shorten management time, save management cost, and improve the quality of lean management and should be easy to establish and popularize. On the basis of the project schedule management mining information technology tools based on the database information, this study examines the development mode of the data warehouse system. The rapid development of data warehouse and data mining technology can also promote the development of intelligent management information systems. Taking the data warehouse as the core, this study proposes an intelligent architecture of management information systems. The results show that

database information mining based on the intelligent optimization algorithm can effectively improve the efficiency of enterprise information mining. Before a data warehouse is built, various related factors, such as the development method of the data warehouse, the goal, the necessity, the return on investment, the return period of investment, and the investment effect, should be carefully and thoroughly analyzed. Among these factors, the development method has the most important influence on the success of the data warehouse. In the open method, this study makes certain progress, but it still needs continuous improvement to be put into large-scale practical applications. The follow-up research will continue to use existing scientific and technological means to improve the quality of the article research and promote the development of in-depth information mining to a higher level.

DECLARATION OF CONFLICTING INTERESTS

The author(s) declared no potential conñicts of interest with respect to the research, authorship, and/or publication of this article.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

Fei, J., Yong, J., & Hui, Z. (2017). Artificial intelligence in healthcare: Past, present and future. *Stroke and Vascular Neurology*, *2*(4), 230–243. doi:10.1136/svn-2017-000101 PMID:29507784

Gao, X., Chen, J., & Huai, N. (2019). Mining heterogeneous information networks. *Information Processing & Management*, *55*(3), 844–857. doi:10.1016/j.ipm.2019.01.002

Hashimoto, D. A., Rosman, G., & Rus, D. (2018). Artificial Intelligence in Surgery: Promises and Perils. *Annals of Surgery*, *268*(1), 1–3. doi:10.1097/00000658-900000000-95522 PMID:29389679

Hassabis, D., Kumaran, D., Summerfield, C., & Botvinick, M. (2017). Neuroscience-Inspired Artificial Intelligence. *Neuron*, *95*(2), 245–258. doi:10.1016/j.neuron.2017.06.011 PMID:28728020

Hurlburt, G. (2017). How Much to Trust Artificial Intelligence? *IT Professional*, *19*(4), 7–11. doi:10.1109/MITP.2017.3051326

Jin, J., Liu, Y., & Ji, P. (2019). Review on Recent Advances in Information Mining From Big Consumer Opinion Data for Product Design. *Journal of Computing and Information Science in Engineering*, *19*(1), 010801.1-010801.19. 10.1115/1.4041087

Kermadi, M., & Berkouk, E. M. (2017). Artificial intelligence-based maximum power point tracking controllers for Photovoltaic systems: Comparative study. *Renewable & Sustainable Energy Reviews*, *69*(MAR), 369–386. doi:10.1016/j.rser.2016.11.125

Krittanawong, C., Zhang, H. J., & Wang, Z. (2017). The Present and Future: Artificial Intelligence in Precision Cardiovascular Medicine. *Journal of the American College of Cardiology*, *69*(21), 2657 - 6 4. 10.1016/j.jacc.2017.03.571

Liu, Z., Zuo, M. J., & Jin, Y. (2017). Improved local mean decomposition for modulation information mining and its application to machinery fault diagnosis. *Journal of Sound and Vibration*, *397*(Complete), 266-281. 10.1016/j.jsv.2017.02.055

Nasiri, S., Khosravani, M. R., & Weinberg, K. (2017). Fracture mechanics and mechanical fault detection by artificial intelligence methods: A review. *Engineering Failure Analysis*, *81*(November), 270–293. doi:10.1016/j.engfailanal.2017.07.011

Qian, J., Song, Y., & Wang, S. (2019). Quality and safety traceable information mining in wheat flour processing based on risk matrix and flow analysis method. *Nongye Gongcheng Xuebao (Beijing)*, *35*(2), 302–308.

Qin, C., Yao, D., Shi, Y., & Song, Z. (2018). Computer-aided detection in chest radiography based on artificial intelligence: A survey. *Biomedical Engineering Online*, *17*(1), 113–115. doi:10.1186/s12938-018-0544-y PMID:30134902

Syam, N., & Sharma, A. (2018). Waiting for a sales renaissance in the fourth industrial revolution: Machine learning and artificial intelligence in sales research and practice. *Industrial Marketing Management*, *69*(FEB), 135–146. doi:10.1016/j.indmarman.2017.12.019

Taddeo, M., & Floridi, L. (2018). Regulate Artificial Intelligence to Avert Cyber Arms Race. *Social Science Electronic Publishing*, *556*(7701), 296–298. doi:10.1038/d41586-018-04602-6 PMID:29662138

Wu, S. (2020). Research on the application of spatial partial differential equation in user oriented information mining - ScienceDirect. *Alexandria Engineering Journal*, *59*(4), 2193–2199. doi:10.1016/j.aej.2020.01.047

Wu, W., Yu, Z., & He, J. (2019). A Semi-Supervised Deep Network Embedding Approach Based on the Neighborhood Structure. *Big Data Mining and Analytics*, *2*(3), 205–216. doi:10.26599/BDMA.2019.9020004

Zhai, T., & Di, L. (2019). Information Mining and Visualization of Highly Cited Papers on Type-2 Diabetes Mellitus from ESI. *Current Science*, *116*(12), 1965–1974. doi:10.18520/cs/v116/i12/1965-1974