Retraction

Retraction: Research on Massive Data Processing System of Coal Mine Safety Monitoring Based on Computer Technology (J. Phys.: Conf. Ser. 1992 032013)

Published 9 September 2022

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The authors of the article have been given opportunity to present evidence that they were the original and genuine creators of the work, however at the time of publication of this notice, IOP Publishing has not received any response. IOP Publishing has analysed the article and agrees there are enough indicators to cause serious doubts over the legitimacy of the work and agree this article should be retracted. The authors are encouraged to contact IOP Publishing Limited if they have any comments on this retraction.

Retraction published: 9 September 2022
Research on Massive Data Processing System of Coal Mine Safety Monitoring Based on Computer Technology

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Abstract. Production safety is the most important problem in coal mine production, which requires us to monitor and monitor the coal mine production process in real time. Therefore, under the computer technology, we can carry out multi-sensor acquisition, including gas concentration, carbon monoxide content, environmental pressure, humidity, etc., which can collect and monitor the underground operation in real time. Through computer technology, coal mining enterprises can monitor and control safety production in real time. Through the sensor, we can monitor the working state of equipment, such as circulating fan, high-pressure water pump, winch and motor, which can deal with a variety of abnormal production problems, such as over-voltage, power loss of current, lack of phase. With the application of various sensors, the information system will collect more and more data, which will lead to great challenges for coal mine safety monitoring system. Therefore, we must enhance the data processing system, which will better coordinate the data interaction of various subsystems. Through the data processing system, we can improve the efficiency of coal mine safety monitoring, which will ensure the smooth operation of coal mining enterprises. Firstly, this paper analyzes the coal mine safety monitoring system. Then, this paper analyzes the source of the data. Finally, this paper analyzes the processing method.

Keywords: Computer Technology, Coal Mine Safety Monitoring, Massive Data, Data Processing System

1. Introduction
With the development of coal mine industry, coal mine safety problems occur frequently in China, which has caused great hidden danger to our social security. At present, underground mining is the main way of coal mining, which has a certain risk [1]. With the wide application of information technology, we must improve the safety of mine production, which requires us to monitor the production process in real time. Therefore, coal enterprises must ensure safe production, which requires the installation and improvement of safety supervision system. Safety monitoring and control
system is a kind of real-time acquisition and transmission system for various important underground parameters, which can effectively prevent natural disasters and harmful gases [2]. By reducing the frequency of accidents, enterprises must establish a scientific and perfect monitoring system, which can improve the production conditions of coal mines. However, real-time monitoring will produce a large amount of data, which makes the security data present the characteristics of multi-dimensional structure, linkage and metaphor [3]. At the same time, the real-time monitoring will produce massive data of TB level. Therefore, the explosive growth of information will lead to information processing lag, which will lead to cumbersome business processes. Therefore, we must strengthen the security monitoring of massive data processing [4].

2. Analysis of coal mine safety monitoring data source
Coal mine production is one of the most complex systems engineering. Among them, the production process will involve a lot of monitoring data. The coal mine safety monitoring massive data source is mainly the underground equipment layer each monitoring equipment [5]. Among them, the collected data are mainly environmental parameters, such as methane, carbon monoxide, oxygen, temperature, pressure, etc., which can monitor data and control equipment related data in real time. Various subsystems and sensors in underground substation can collect environmental parameters, which can be transmitted to cloud platform through industrial Ethernet. In this way, we can implement the retrieval and processing of client data. With the continuous development of coal mine information technology, the geometric progression of coal mine safety monitoring data increases, including production, safety, management, transportation and marketing [6]. According to different data sources, the data can be divided into various types, as shown in Figure 1.

![Figure 1. Coal mine safety monitoring data source analysis.](image)

3. Massive data processing of safety monitoring
3.1. Data preparation
On the basis of knowledge visualization, data preparation is the process of preprocessing the original data to meet the requirements of the model, including data cleaning, data integration, data specification and data transformation. Data cleaning mainly solves a variety of problems after the security data set, such as value missing, noise data, outlier data and so on. The security problem mainly describes the problem of text type, which has strong randomness in the process of manual input. In the conversion of numerical representation, we usually have missing values or outliers, which will affect the results of
knowledge discovery. Therefore, we need to clean up the data as the first step. Data integration is the process of merging data sets from different sources, especially in the process of object interaction. There will be different relational tables in the data storage of different objects, which requires the visualization and integration of multiple data sets. Data specification is a process of selecting specific data from a large number of security data for analysis. With secure data sets, we can process all data without filtering [7]. By simplifying the data, the data specification can be used for attribute specification and case extraction. Data transformation is the process of constructing new attributes, normalization and discretization based on the original data set, which can make the data meet the analysis requirements. The data preparation process ensures the accuracy, integrity and credibility of mining data, which can extract higher confidence of hidden knowledge.

3.2. Analysis method selection
Analysis methods serve for security visualization, which needs to consider the data type of variables. By solving the security problem identification, we can analyze the univariate analysis of the security data set. Through frequency statistics, we can identify the distribution law of security problems. By studying the interaction analysis of multiple variables of security objects, we can analyze the applicability and security according to various methods, such as correlation analysis, correspondence analysis, cluster analysis, principal component analysis, etc. By studying the interaction of security objects, we can determine the research methods according to the objects and their related variables.

3.3. Model construction and analysis
The model construction and analysis phase is a process of building a visual model according to the task. Through the construction and selection methods, we can use data analysis tools to build a visual model. By selecting reasonable parameters, we can get the final analysis results. Among them, the commonly used models include classification model, prediction model, correlation analysis model, frequency analysis model and so on.

4. Coal mine safety monitoring system

4.1. Architecture of coal mine safety monitoring system
In the 1990s, with the rapid development of computer hardware, the monitoring industry has been greatly developed. China has studied various coal mine safety monitoring systems, such as KJ66, kj80, KJ92, KJ95, KJ101 and other systems, which take into account the integrated and digital systems. After years of practice, the safety monitoring system has been greatly improved in mine management and safety monitoring, which has a significant effect. This paper introduces a typical coal mine safety monitoring system architecture, as shown in Figure 2.
Figure 2. Coal mine safety monitoring system architecture.

4.2. Visual architecture of safety monitoring system

Coal mine safety detection management information system is the basis of safety visual management, which can visually show the safety information resources. Safety detection information system is a complex system engineering, including acquisition, real-time transmission, scientific storage, processing, visualization and other links, which requires the necessary technology to do the guarantee. Through the coal mine safety management information process model, we can realize the safety visualization management. The architecture of coal mine safety monitoring system includes four layers: perception control layer, network interconnection layer, data platform layer and intelligent application layer, as shown in Figure 3.
4.3. Information control in coal mine safety monitoring

Network information control is a control method based on network information system, which can share information more conveniently and quickly. By working together efficiently, we can change the complex and inefficient manual office. Through the network information, we can establish the network detection and monitoring, which is to further monitor the coal mine safety detection and control information with the systematic idea. Through the integrated information system, the network information realizes the business process, which can set strict requirements for all business workflow and operation specifications. Through real-time control, we can detect the control information accurately. Through the network information, we can control the coal mine environment detection and production control design, which can timely grasp the information and business progress of various business processes. Through the reasonable deployment of network business implementation, we can monitor the progress of various services in real time, which will improve the efficiency and service level of the network department.

5. Conclusion

Through computer technology, we can realize the information control of coal mine, which can monitor the safety situation in coal mine. Through the data processing system, we can realize the interaction between staff and management personnel, which can monitor the production process and safety status.
of coal mine in real time. In coal mine safety monitoring and control, computer technology can ensure the safety and reliability of coal mine production, which will improve people's work efficiency.

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