Research on the new mode of intelligent maintenance and health management of coal mine equipment

Xiangang Cao

Xi'an University of Science and Technology

Mengyuan Zhang (✉ zhangmengyuan0404@163.com)

Xi'an University of Science and Technology

Yong Duan

Xi'an University of Science and Technology

Kexin Wu

Xi'an University of Science and Technology

Yanchuan Li

Xi'an University of Science and Technology

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Abstract

Based on the analysis of the current challenges and deficiencies in the maintenance and management of coal mine equipment, an intelligent maintenance and health management system framework for coal mine equipment is designed for the big data characteristics of the life cycle of coal mine equipment. Taking the big data processing and analysis of coal mine equipment as the main line, it proposes and elaborates the key technologies of the intelligent maintenance and health management of coal mine equipment driven by big data, including the unified description and analysis of multi-source heterogeneous big data, and intelligent fault diagnosis of coal mine equipment. Technology, health evaluation and prediction technology, intelligent maintenance decision-making technology, etc. Through the implementation of the above-mentioned system architecture and key technologies, data-driven life-cycle intelligent decision-making is realized, which promotes the continuous optimization and improvement of equipment process management and reduces business costs. The proposed system architecture provides a reference model for subsequent development.

Full Text

Due to technical limitations, full-text HTML conversion of this manuscript could not be completed. However, the manuscript can be downloaded and accessed as a PDF.

Figures

Figure 1

Life cycle big data-driven system architecture

Figure 2

The logical relationship between the research directions of fault diagnosis

Figure 3

Mining system health evaluation, life prediction and maintenance decision-making mechanism

Figure 4

Two-layer opportunity maintenance predictive decision-making model of mining system integrating production scheduling and maintenance behavior