VITU ACADEMIC
PUBLISHING PTE.LTD

Application of artificial intelligence technology in electrical automation

Longfei Xiao
Zhejiang Adizhili Medical Technology Co., Ltd. Jiaxing, Zhejiang 314000

Abstract:

The continuous deepening of the application of China's artificial intelligence technology in the field of electrical automation has effectively improved the overall operating efficiency and stability of electrical automation, and improved the stability and safe operation of electrical automation systems. This article conducts research, analysis and summary on the current application of artificial intelligence technology in industrial activities. It is hoped that the final conclusion can help China's artificial intelligence technology break through the current bottleneck and effectively improve china's industrial production efficiency.

Keywords:

Artificial intelligence: Electrical automation, Technology application

Introduction

In recent years, China's social and economic development has become faster and faster, and its industrial level has also been continuously improved. With the rapid development of science and technology, many advanced technologies have been widely used in China's industrial development process, which has promoted the modernization of industry to a large extent. Among them, electrical automation control is an important link in the current industrial development process. There are many problems in traditional electric braking control work, and its improvement and optimization require in-depth research on artificial intelligence technology.

1. Discuss the application value of artificial intelligence technology in electrical automation control

1.1 Advantages of artificial intelligence technology

From the perspective of practical application, artificial intelligence technology and electrical automation technology have the following advantages. First, artificial intelligence technology has effectively changed the way of production. Combined with the research of expert systems, it has made the entire production process more scientific, changed the way products circulate, deepened the construction of automation, and made electrical automation control technology more accurate and efficient; second, artificial intelligence technology can calculate production costs scientifically, understand production inputs, output and efficiency, thereby promoting the construction and upgrading the electronic automation industry, fully realizing industry construction, and promoting the optimization of industrial structure.

1.2 Current status of the application of artificial intelligence technology in electrical automation control technology

First of all, artificial intelligence technology reduces the cost of data collection, improves the accuracy of data collection, and improves data processing capabilities. In electrical automation control production, artificial intelligence technology can be used to screen, organize and control the useful information required by the system, and use the calculation and analysis mechanism of these data in production, and finally save the processed data, comprehensively improving Control quality and efficiency in electrical automation technology.

Secondly, artificial intelligence technology strengthens the supervision and management of automation systems and ensures the stability and safety of electrical system operations. Artificial intelligence technology optimizes the monitoring function of the system, such as real-time monitoring and analysis of major equipment in the electrical system, and can synchronously control the main switch of electrical equipment, effectively realizing intelligent monitoring and electrical data analysis. Being able to call the police, record research, etc., based on the data operating status,artificial intelligence technology reduces the incidence of accidents and also reduces the difficulty of handling accidents.

Furthermore, artificial intelligence technology reduces the difficulty of human operation and simplifies the workload through scientific simulation control. For example, artificial intelligence control technology realizes operation control, and the electrical system can be processed and controlled through the mouse or keyboard. For operators of the electrical control system, they can realize simultaneous grid-connected and load operation through the control program, which meets various requirements and goals of China's industrial construction control.

1.3 Analysis of the actual use of artificial intelligence technology in electrical automation control

First, analyze the use of artificial intelligence technology in electrical automation equipment. Electrical automation equipment is a complex systems, involving multiple production knowledge and subject field knowledge. In operation, the operation of electrical automation equipment needs to be equipped with professional operations and operation to maintenance personnel. The operator should have professional knowledge and practical operation ability, and have good professional ethics and comprehensive quality and responsibility. In addition, the operator's have large workload and heavy work responsibilities, and the talents in our country in this area are short. At the same time, the electrical automation system is very complicated, and various operations will affect the entire production system. Human computing and logical analysis capabilities are limited, and operational errors are common. However, artificial intelligence technology can solve the above difficulties. First, through professional computer system programming and data processing technology, it can comprehensively improve the efficiency of work and reduce the cost of electrical automation production, letting he actual operation value and quality meet the comprehensive construction of artificial intelligence.

Secondly, the application of artificial intelligence technology in electrical control. Electrical control technology occupies a core position in electrical automation technology, and the application of artificial intelligence technology is also an important foundation for improving the automation control of electrical equipment. For example, in the electrical control process, electrical automation equipment needs to be strengthened to improve the work operation efficiency of the entire industry. The use of automation can reduce production costs, reduce human resource investment, and improve production quality and operating efficiency. At present, the mainstream electrical automation control technologies in electrical control are mainly concentrated in expert systems, fuzzy control and neural network systems.

Implementation of fuzzy control technology. Fuzzy control technology uses traditional electrical automation control technology and expert experience as the basic rules of simulation analysis. It starts from the perspective of constructing basic ideas, uses simulation control and its analysis object simulation model, and finally completes the scientific control of the electrical system. Judging from the existing control system, the simulation system has the characteristics of automatic control, and uses fuzzy logic inference rules as the basic theory, combined with the computer system to form a complete feedback channel closed loop.

Briefly describe the expert control system. Expert control technology is mainly based on expert system theory and integrates control technology, logical analysis, etc. to realize artificial intelligence control. This technology combines professional experience and practical application needs, and shows strong automation control flexibility and pertinence in the actual electrical control application process. For example, it can optimize control efficiency, change various parameters in the control period, and meet a variety of production environmental needs, which comprehensively improved the operating efficiency and quality of electrical equipment.

Implementation of neural network control. The neural network control principle combines the activity simulation of human brain neurons and common approximation principles to build a complete network model. At present, the research on neural networks in my country is very extensive, and the existing technology is also very mature, and has achieved good operating results

in actual electrical control systems. From the perspective of operation, some production units use analog control technology, combine DC and AC transmission, and use Mamdani and Sugeno as active transmission controls to achieve different speed controls to meet multiple requirements for electrical automation operations.

2. Brief description of the application of artificial intelligence technology in electrical automation control.

In the context of industrial production, China's electrical production industry is developing rapidly, and the safe operation of electrical equipment has a direct impact on people's lives. To further improve people's quality of life and promote the stable operation of electrified equipment, it is necessary to actively change the rules of traditional electrical operations, reduce operating errors, and ensure the accuracy of electrical control. This can save a lot of time and costs in industrial production.

2.1 Operation improvement

Artificial intelligence technology has changed the field of electrical operation, simplifying the electrical operation process through programming and data analysis, uploading, processing, etc., and improving the efficiency and quality of electrical operation; in addition, combined expert systems, fuzzy theory, etc. have realized data Simulation and analysis reduce possible errors caused by manual operation and maximize the stability and scientificity of electrical system operation.

2.2 Fault judgment and processing

Artificial intelligence technology is based on fuzzy theory, expert technology and neural network control, and also has very important application value in the field of fault diagnosis. Traditional fault diagnosis, firstly, the fault diagnosis method is complicated and the accurate diagnosis rate is low; secondly, fault diagnosis requires a lot of time and manpower, which conflicts with the current industrial development needs. For example, in the fault diagnosis of transformers, the application of artificial intelligence technology has automated the diagnosis of transformer faults, greatly improving the efficiency and accuracy of fault diagnosis.

Conclusion

In summary, Artificial Intelligence technology has changed people's lifestyles and promoted the progress of electrical automation control technology. It has strong application value and significance in reality. In order to further promote the construction of artificial intelligence technology, it is recommended that relevant units continue to optimize and innovate, and continuously improve the operating efficiency and quality of electrified automation control technology.

References:

[1] Yan Li, Yu Du. Discussing the application of artificial intelligence technology in electrical automation control [J]. Science and Technology Information, 2019, 17(34): 243-244.

[2] Xuefeng Li. Artificial Intelligence in Electrical Automation Control Application and reflection in electrical automation control[J]. Digital Communications World, 2019(12):201.