Research on Artificial Intelligence Technology in Electrical Automation Control

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Abstract. During the development of electrical automation control, artificial intelligence technology has become an important development trend. The stability and practical advantages of control based on artificial intelligence technology can effectively improve the level of electrical automation control. Such as remote control, intelligent monitoring, troubleshooting, product design, etc. only need to explore the application of artificial intelligence technology in electrical automation control.

Keywords: Electrical automation, artificial intelligence technology, technological advantages, application analysis.

1. Introduction
Electrical automation control is a fusion product of modern industry and electronic information technology, which improves production efficiency and safety. In the context of the development of artificial intelligence technology, rationally use artificial intelligence technology for electrical automation control development, build a new era of electrical automation control mode, break the limitations of traditional electrical automation control work mode, give full play to the advantages of artificial intelligence technology application, and promote electrical automation control technology change and system upgrade.

2. Artificial intelligence technology
Artificial intelligence technology, as an emerging technology generated by multidisciplinary intersects, has promoted the multidisciplinary interdisciplinary research boom, and has made great progress in social technology. Since artificial intelligence technology covers multiple disciplines, artificial intelligence technology has a very broad application prospect, and can be applied in many industries and real scenes.

The artificial intelligence technology carries out deep learning based on the computer system. In the neural network computer system, the collected data of multiple sensors is processed to simulate the human brain to think and judge, and make corresponding judgment instructions. Due to the particularity of artificial intelligence control technology, it truly replaces the individual's work, which makes the individual have more energy to engage in research work.

For example, when the field of electrical automation and control develops, in order to effectively replace the work of employees, artificial intelligence technology can be used reasonably to realize the upgrade and technological change of electrical automation and control systems. Artificial intelligence
control replaces employee operation management to improve the overall safety and reliability of electrical automation control production. The development and application of artificial intelligence technology will promote the high-quality development of the social economy, provide users with a safer and more comfortable experience, and exert the social benefits of the application of artificial intelligence technology [1].

3. Analysis of the advantages of artificial intelligence technology application in electrical automation control

3.1. Stability
Artificial intelligence technology relies on the development of computer technology. Due to the reliability of the computer technology, the artificial intelligence technology has certain application stability, can actively avoid the interference of external information, and ensure the reliability of electrical automation control work.

The application of artificial intelligence technology in electrical automation control work can improve the safety and stability of the electrical automation control system operation and effectively reduce the electrical automation control operation cost. If equipment failure occurs during the electrical automation production process, artificial intelligence technology can diagnose and analyse the failure and quickly solve the problem to ensure the stable operation of the electrical automation control system.

In the application process of artificial intelligence technology, relevant information technology can be introduced according to the actual needs of electrical automation control work to realize the upgrade of electrical automation systems, comprehensively improve the level of artificial intelligence control, build a closed-loop ecological control model, and rationally exert the application value of artificial intelligence technology. Promote the sustainable development of China's electrical automation.

3.2. Practicality
Practicability is the main advantage of the practical application of artificial intelligence technology, which can meet the various work requirements of actual electrical automation control production, and exert the practical application value of artificial intelligence technology. Artificial intelligence technology includes cutting-edge technologies in many fields, such as neural network computers, communication technology, cloud computing technology, and sensor technology. Due to the advantages of artificial intelligence technology integrating multiple disciplines, multiple fields, and multiple technologies, it has great market application potential.

When the electrical automation control work is carried out, artificial intelligence technology can be used to realize intelligent monitoring and remote control of the control system, which effectively reduces the labor cost. The staff can use the artificial intelligence monitoring system to collect relevant data and information, and with the support of electronic information technology, to achieve remote control of electrical automation production systems, improve the timeliness and practicality of electrical automation control systems.

The rational application of artificial intelligence technology can achieve precise control of electrical automation systems, improve the overall production system operation safety and efficiency, and maximize the use of resources. In the future development of the industrial field, artificial intelligence technology will play an important role, realize the vision of intelligent industrial development, and promote the strategic development of my country's industrial power [2].

4. Discussion on Application of Artificial Intelligence Technology in Electrical Automation Control

4.1. Remote control of electrical automation
When the electrical automation control work is carried out, in order to achieve all-weather monitoring and control, accurately control the electrical production system to ensure the safety and reliability of the
When the electrical automation control system is designed, artificial intelligence technology can be reasonably applied. Based on the support of artificial intelligence technology, it can realize the remote control of the electrical automation system, adjust the production process and links in time according to the actual production schedule and situation, realize the time-sensitive control requirements of the electrical automation system, and effectively save labor costs and production resources.

For example, when the electrical automation system is running, there is a failure of equipment that cannot be produced and processed according to the plan. If the system adjustment and plan changes are performed manually, a certain production time is required, which affects the quality and efficiency of electrical production and processing. Under the application of artificial intelligence technology, the equipment failure can be remotely controlled, the severity of the equipment failure can be quickly judged, and the actual impact caused by the failure and the expected time for repair can be analyzed based on the data. In order to ensure the progress of the production work, the artificial intelligence control system can judge the production progress. If the equipment failure cannot be repaired and solved in a short time, it can quickly carry out remote control to start the standby production plan to ensure the overall progress of the production. If the repair time of the equipment is short and the losses can be recovered in the subsequent production, the equipment failure is remotely controlled to ensure the safety and reliability of the production work.

Artificial intelligence technology continues to develop and mature, showing outstanding advantages in all walks of life. The introduction of artificial intelligence technology in electrical automation control can achieve high-precision remote control, solve the problem of electrical system control delay, and ensure the safe and stable operation of electrical systems. The application of artificial intelligence technology has a great impact on traditional data and information technology. In order to efficiently process massive data information and ensure the accuracy and timeliness of electrical system control, it is necessary to use artificial intelligence technology to replace the traditional information control system, build a remote intelligent electrical automation control system, and reasonably use big data processing technology and 5G mobile communication Technology to realize the control work requirements of the electrical system and ensure the safety and reliability of the electrical system operation.

4.2. Intelligent monitoring of electrical automation operation

In the electrical automation production workshop, there are very few operation management personnel, and many production processes are replaced by mechanical equipment. However, the safety and reliability of equipment and machinery production need to be monitored in time to ensure the processing quality of products. In order to meet the requirements of the electrical automation control system, when carrying out system upgrade and optimization, artificial intelligence technology should be used reasonably to construct an electrical automation intelligent monitoring system to achieve accurate monitoring of electrical production. If the equipment fails, the monitoring system can quickly locate the specific information of the equipment failure, improve the processing efficiency of the equipment failure, and ensure the overall safety and stability of electrical automation production.

According to the analysis of the intelligent monitoring system based on electrical automation operation, the centralized monitoring of the electrical system improves the overall maintenance efficiency of the electrical system, lays the foundation for the intelligent control of the electrical system, and rationally exerts the application value of artificial intelligence technology [3].

Due to the effective application of artificial intelligence technology in electrical automation control, the design of electrical automation control system should be carried out based on the support of artificial
intelligence technology to ensure the reliability and feasibility of subsequent electrical automation system operation.

When designing an intelligent monitoring system for electrical automation operation, designers can quickly complete the system design work with the help of artificial intelligence self-learning function, give full play to the advantages of centralized intelligent monitoring operation of electrical systems, and ensure the efficient and safe operation of electrical systems. With the support of artificial intelligence technology, the operation of the automated intelligent monitoring system has effectively reduced the energy consumption of the system processor and improved the safety and reliability of the system operation. In the design of electrical automation systems in the future, more emerging technologies should be introduced to promote the development of intelligent electrical systems and build intelligent electrical control systems.

4.3. Troubleshooting in electrical automation control

The troubleshooting, diagnosis, and handling of electrical automation control operations are critical, which directly affects the reliability of electrical automation systems. Due to the 24-hour working operation of the automation equipment, the loss of some equipment is intensified. If the maintenance work is not carried out in advance, the related safety hazards are eliminated. Once the electrical automation control is running, the equipment and instruments appear damaged and damaged, which will directly affect the production of the electrical system. Operation efficiency. In the past, when the electrical system was running, the staff mainly went to the site for fault diagnosis and elimination. The fault diagnosis and elimination not only increased the work cost, but also affected the production progress of the electrical system.

The traditional electrical automation control troubleshooting mode has gradually been eliminated. Through the application of artificial intelligence technology, new equipment troubleshooting mode has been constructed. During the troubleshooting of the artificial intelligence electrical automation control system, reasonable use of big data technology to collect past equipment failure information, diagnostic information, working condition information, etc. Under the analysis and processing of big data, predict and diagnose possible equipment failures, realize the maintenance of electrical equipment through the artificial intelligence online monitoring system, find existing equipment failures in advance, take corresponding solutions according to their equipment failures, and scientifically dispatch Maintenance personnel to improve the overall efficiency of equipment maintenance.

Through the application of fault diagnosis and processing of artificial intelligence technology, the efficiency of fault diagnosis and processing of electrical automation systems has been effectively improved, the operational risk of electrical automation has been actively eliminated, and the overall operational safety, reliability, and stability of electrical automation systems have been improved[4].

4.4. Design of electrical automation control products

In the development of electrical automation control, in order to make full use of artificial intelligence technology, the design method of electrical automation products should be actively optimized to continuously improve product performance and reliability, and ensure that electrical automation control products can meet the needs of current commodity production and processing.

When applying artificial intelligence technology, you can build a visual product model and use artificial intelligence technology to evaluate the product's operating performance, make reasonable adjustments to the product's performance, parameters, and design schemes, effectively improve the design reliability and production quality of electrical products. Promote the development level of China's electrical automation production control.

5. Conclusion

In the design and operation of electrical automation control systems, in order to ensure the safety and reliability of system operation, artificial intelligence technology should be used reasonably to upgrade the control system in an all-round way, build an intelligent electrical control system, improve the safety
and reliability of electrical automation operation, and ensure that the pass rate of product processing, the efficient use of social resources, and the maximum value of artificial intelligence technology.

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