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Exploration of Big Data Information Network Based on Artificial Intelligence Technology

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Abstract: The rapid development of the Internet has changed people's work and life. The use of network technology, mobile communication technology and cloud computing technology has greatly improved the efficiency of data collection and transmission. While the rapid development of the network provides convenience for human beings, it also puts forward new requirements on network security, data protection, information overload, information divide and so on. However, while enjoying these conveniences, we should pay more attention to the safety management of AI and make it a research focus. Currently, the degree of completeness of AI needs to be improved. The big data network based on artificial intelligence can better cope with the complex and severe network security problems, enhance the security guarantee ability of multi-dimensional network, and promote the progress of national network science and technology.

Keywords: Artificial intelligence techniques; Big data; Information networks; Applications

Introduction

The fundamental purpose of artificial intelligence is to simulate and expand human intelligence, so that it has the ability to learn, think and decide independently, thus improving the quality of human life. With the arrival of the big data era, the development of the Internet has ushered in an unprecedented opportunity, and at the same time has brought new challenges to network security. The application of artificial intelligence in the governance and assessment of information security can improve China's information system, enhance its security performance and promote its innovative development.

1. Advantages of big data information network based on artificial intelligence

In the actual operation of big data systems, external virus invasion and system downtime are often encountered. With the rapid development of artificial intelligence technology, the security protection system in the big data environment is facing more and more challenges, how to effectively resist external attacks and maintain its own stability to improve its protection system, there is an urgent need to carry out in-depth research on its causes and laws. In the case of parts failure or functional degradation, the use of artificial intelligence can achieve automatic maintenance of parts, reduce downtime and ensure continuous production.Among them, based on advanced heuristic learning and programming, the resilience of intelligent management systems can be fully enhanced, which is an important part of artificial intelligence. In the past, enterprises dealt with networked information by only capturing the organisation of the parts, and it was difficult to make a precise understanding of its internal structure. For this reason, this project proposes to use artificial intelligence technology to comprehensively regulate networked multi-systems, in order to achieve dynamic regulation and control of incomplete and unknown systems, and to enhance the overall regulation capability of enterprises on networked systems.

2. The application of artificial intelligence technology in big data information network

2.1 Artificial immunity technology and intelligent database firewall technology

The AI immune system is a much newer technology with an expanding field of application. This system can enrich and expand the modern AI immune system to a certain extent. At the same time, it also has an important role in promoting the current research on big data immune networks. For example, using artificial gene immunoassay technology, multiple unknown viruses can be detected and analysed at the same time by simultaneous recombination of different types of viruses, which can lead to purposeful drug development. However, as a non-negative selection method, it still has great limitations in its practical application and needs to be studied in depth.

In addition, an intelligent database firewall system is established so that it can function to the maximum extent. Using probabilistic physical operations and other means, more accurate risk evaluation of data is carried out. At the same time, by studying and analysing the historical data of network operation, various behavioural patterns and possible attack modes that may occur during network operation are

identified, which reduces the arithmetic burden on the system, and provides proactive defence against potentially malicious intrusions, as well as defence against high-level ransomware. The use of intelligent firewall technology in security management and local network monitoring can improve the security performance of the system, and can well handle the information interaction between various services, as well as the rejection of undesirable information, which provides strong support for the construction of a healthy and environmentally friendly Internet ecological environment.

2.2 Rule-generating expert system

With the development of Internet technology, people live in an increasingly complex network environment, and its security has become a focus of attention. Therefore, it is very necessary to carry out research on secondary development and optimisation based on intrusion detection system. The application of artificial intelligence technology to the intrusion detection system can effectively improve the performance of the intrusion detection system, so as to establish a more perfect database and machine inference mechanism.The power of the system is that it not only contains various types of intrusion patterns, but also has the ability to mine, capture and analyse data information. Therefore, the method can effectively compile specific procedures to capture various illegal intrusions in real time and accurately. In the process of practical application, the basis of intrusion judgement provided can be used for targeted treatment of intrusion from a broader perspective. The method can not only achieve rapid and accurate tracking of various types of illegal intrusion, but also scientifically analyse the degree of harm, and respond sensitively to detect potential harm in a timely manner.

2.3 Expert knowledge base technology

Expert knowledge is an indispensable link in the application of expert systems, and expert knowledge has a great impact on the effectiveness of the application's use. Expert knowledge base is an emerging technology that contains a large amount of basic theoretical knowledge and also includes many specialised technologies. The writing of code and the creation of databases usually refer to existing experience in computer network management and assessment, ensuring that computer network management decisions are based on the experience of professionals in order to enhance the efficiency of processing and assessment.

2.4 AI agent management

In essence, AI agents and management can be regarded as specific applications that take up a large amount of resources in the knowledge base. The system not only handles multiple sources of data accurately and quickly, but also integrates and analyses relevant data, which greatly improves the efficiency of the work. Intelligent agent administrators can also check the corresponding work situation at the end of each day's work, so as to fully extract the required information to ensure a more targeted implementation of information data and meet the actual needs of users. Currently, intelligent agent management technology provides a credible pathway for users to save time and improve user experience.

2.5 Artificial Intelligence Problem Solving Technology

In the big data information network, artificial intelligence problem solving technology shows a diversified development trend, which can not only improve the efficiency and accuracy of data processing, but will also have a far-reaching impact on various industries. In the application, the corresponding solution method can be given according to the specific situation of the specific problem, and the algorithm can be implemented with limited steps. The core of the technique is statechart search and is based on structured knowledge. The statechart-based search technique transforms the problem into a statechart and searches for the best path through different search algorithms (e.g., depth-first search, breadth-first search, etc.). Its specific application process includes both state space oriented search and game search, and the best search technique should be selected for better search results.

3. Conclusion

In summary, this paper discusses the application of artificial intelligence technology in big data information network and its advantages. The big data information network based on artificial intelligence can better solve the network security problem and improve the security of multidimensional computer network. The application of artificial intelligence technology in information networks includes artificial immunity technology, intelligent database firewall technology, rule-generating expert system, expert knowledge base technology and artificial intelligence agent management. These technologies play an important role in improving network security, data protection, intrusion behaviour assessment, knowledge base management and intelligent agent management. Artificial Intelligence problem solving techniques show a diversified development trend in big data information networks, which has a profound impact on various industries.

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