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The Role of Artificial Intelligence in Advancing Computer Network Technology

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Abstract: With the rapid expansion of network accessibility through computers and smartphones, the exponential growth of data has placed a significant burden on computer networks. This challenge necessitates continuous innovations in network technology. Artificial intelligence (AI) has emerged as a promising solution to overcome the development bottleneck of computer networks by enhancing efficiency, reducing operational costs, and enabling intelligent problem-solving. AI-driven advancements can revolutionize computer network technology, improving stability, efficiency, and scalability to meet the increasing demands of massive data processing. By integrating AI into network management, the operational efficiency of computer networks can be enhanced, aligning with the evolving technological landscape. Ultimately, AI not only fosters the development of high-performance computing systems but also signifies a major leap in technological progress, transforming various aspects of life, work, and study.

Keywords: AI; Big Data; Machine learning; Computer Network Technology; Application.

1. Introduction

Nowadays, More and more people can access the network via computers and smart phones. Various kinds of data on the network show an exponential growth trend, which gradually becomes tremendous burden on the computer network. In this case, innovations and improvements of computer network technology are urgently required. The artificial intelligence (AI) technology is an alternative and feasible method to break though the development bottleneck of computer network technology. The power of AI technology will reduce the running cost of computer network and make the computer solve problems more efficient and faster. As a result, computer network technology can realize its revolution and new possibilities of the computer network technology will come out.

2. Overview

2.1 The Definition of Big Data

Computer network technology has penetrated into the development of various industries, and it plays an important role. Based on this, Internet technology also brings a lot of data. In order to obtain more deep information from this data, the processing of these data becomes very important. Therefore, AI analysis technology was born to do this processing. This technology can be used for data integration and analysis, and can explore the valuable potential information in different fields. In short, the AI technology can help the development of human society [1].

2.2 The Connotation and Specific Advantages of AI

At beginning, AI is to develop to do the work and technology with high-risk coefficient, which can reduce artificial casualties. Gradually, it is found that AI technology can improve work efficiency and reduce cost, and it can deal with some work that can’t be handled by human. AI technology has also been utilized in the Internet. In practical application, AI has more advantages than traditional human

data processing:

1) It can make the network more stable. From the perspective of computer network technology, in order to realize the rapid exchange of a variety of information and data, the intervention of AI technology is very important. Based on AI technology, we can develop related functions and complete the upgrade of the system. Moreover, it also can be applied in some scientific analysis, so as to get some data that is difficult to make clear.

2) It has high reasoning technology. Using AI technology, we can extract and analyze information from the underlying information, and apply the processed data to the actual computer network. If there are related problems, we can also process them through AI technology, and conduct accurate search with the help of database.

3) The utilizations of AI technology under big data are efficient and scientific. In the big data era, the scale of various types of data is growing. Coupled with the real-time update of information, the AI technology can ensure the security and stability of data operation. It will not be disturbed by the update of information, and data processing efficiency will be improved a lot as well[2].

3. Application of AI in Computer Network Technology

3.1 Safety Management

Modern people's life and work has close relationship to the network. While the network brings great convenience to people, it will also bring various kinds of unsafe factors. Therefore, in order to avoid the emergence of unsafe factors, we need to strengthen the normal network operation. In this case, we must apply network security technology to fundamentally discover and control hidden dangers on the network. For example, we can constantly improve the level of network technology and use intrusion detection technology to protect all kinds of network information data. The specific detection link, first of all, through the relevant technology to deal with the safety problem information, and analyze the specific conclusion to the user, further create the monitoring report. If the security performance is effectively guaranteed, the relevant supervisors can also timely understand the changes of information in the relevant monitoring network. The security performance of network information can also be guaranteed through the application of firewall technology. Of course, in order to build a safe and reliable protective barrier, technology is needed with a variety of software and hardware equipment [3].

3.2 Network Management

Improving the efficiency of network management needs to cooperate with the corresponding AI technology to achieve the goal of network management. Therefore, when the relevant staff integrates the relevant data and information, they must simultaneously collate and collect the work experience and data of relevant computer experts, establish its effective database. We will apply the AI technology to network management, making data analysis through AI in the era of big data. Of course, the analysis and processing mode of the database determines the degree of the simulation of the actual human thinking mode, which can not only improve the network management efficiency, but also improve the overall work quality to another level.

3.3 AI Agent Technology

AI management software is actually the specific form of AI agent technology, and the components of AI agent technology are knowledge base, rule base and related communication protocols. The remarkable feature of this technology is that it has a strong self-learning ability, which can be applied to the actual computer work, and is more in line with the actual operation of users and the corresponding data setting analysis and processing process. In fact, this is also the presentation of the effect of intelligent computer network application. Through the relevant user using plan and setting points, user constantly recommend user-related information processing solutions, so that more users

can find various advantages under the applications of AI on computer networs, and can apply the technology to the actual work and life [4].

3.4 Information Management and Garbage Disposal

The explosive growth of data on the internet has brought difficulties to the management and data processing. The AI technology can deal with large-scale, disordered and chaotic information. The classification of various information makes the information search and utilization more convenient. Adding AI system into computer network can provide all kinds of services for computer users more reasonably and conveniently. Today's major software recommends information and news according to user preferences, which greatly meets the needs of users and reduces the time of user information screening. At the national level, much information causes serious waste and pollution of information resources. The AI technology makes the processing and destruction of information at the national level more in-depth, which saves more abundant network space for technological development and improves the operation efficiency of computer network [5].

3.5 Network Management and System Evaluation

Network management and system evaluation computer practical use is very prominent in one perspective, it can integrate the information in each system, realize communication and sharing, provide more sufficient information support for management and decision-making, so as to improve work efficiency and scientific work. Traditional network management and system evaluation mainly rely on human resources, and relevant computer workers manually break the information barriers of various departments or set up new systems to integrate all kinds of information. The AI system improves the working efficiency of the computer. After the installation of AI system, the computer can automatically collect effective information as well as carry out information feedback and fault diagnosis. At the same time, system evaluation can quickly evaluate the operation of various parts of the system, and the operation of computer network technology will become more efficient [6].

4. Conclusion

In a word, AI emerges under the integration of various modern technologies, which reflects the development of science and technology. At present, one of the advanced sciences and technology in the process of social development is AI technology. This phenomenon not only makes earth shaking changes in various fields, but also the efficiency and stability of network operation is greatly improved. And the demand of massive information processing has been met. In order to ensure that the operation and development of computer network technology better, it is required to focus on the application of AI. The purpose of high-efficiency and high-quality management can be achieved via AI technology. The operation efficiency of the whole system can be gradually improved, so that the development needs of the times can be fully satisfied. It can greatly change people's study, life, work and other aspects. It not only can promote the development of high-level computer, but also mark the progress and development of technology.

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