

# The Application Optimization of Artificial Intelligence in the Physical Layer of the Computer Network Technology in The Era of Big Data

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**Abstract:**Based on the background of the information age, with the continuous development of computer technology and information network technology, artificial intelligence has also made rapid progress in the era of big data and is closely related to people's daily lives. Artificial intelligence gradually enters people's daily work and life. Therefore, it is very necessary to analyze the application value of artificial intelligence in computer network technology based on the era of big data. The paper discusses the application value of artificial intelligence in computer network technology in the era of big data, and mainly focuses on the related applications of data mining technology, intrusion detection technology and firewall technology, hoping to bring certain reference up to 7.8% and reference to relevant professionals.

**Keywords:** Artificial Intelligence, Physical Layer, Computer Network, Big Data

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## 1. INTRODUCTION

Artificial intelligence is a product built on the basis of computer technology and communication technology. In the era of big data, information processing has shown an explosive development model. The application of artificial intelligence and computer technology to computer networks can effectively improve the efficiency of various information processing. To a certain extent, it can solve the complexity and stability problems encountered in the process of computer information processing, and then better promote the development of modern society in the era of big data. For example, in computer network security management, artificial intelligence technology can be used to input "firewall" instructions on the interface to achieve interception, interference, and shielding of bad information, thereby ensuring the security of the entire network system [1-6].

In the current era, computer network technology continues to develop. Communication technology and network technology have not only increased the productivity of society, but also changed people's lives to a large extent and improved people's living standards. Artificial intelligence is the direction for the development of computer information technology in the future. With this technology, companies can improve their management level, increase the speed of development, and reduce labor costs. In addition, artificial intelligence can also be applied to agriculture, industry and other industries to promote the reform of production methods in related industries. Artificial intelligence technology can be applied to computer network technology to strengthen the security management of computer networks and promote data processing and analysis. It is an indispensable and important part of the future development of computer network technology. The development of artificial intelligence requires the support of computer technology and network technology. The process of artificial intelligence technology needs to use virtual technology to allow the system to continuously simulate people's thinking styles and behaviors. Artificial intelligence technology can only be completed when a certain amount is reached [7-14].

Artificial intelligence technology is a very complex technology. It contains a lot of complex content, and it has similarities with many sciences and technologies, such as linguistics, psychology, computer science, etc. The embodiment of intelligence requires a variety of technologies. Support. Therefore, the development of artificial intelligence technology is to allow artificial intelligence to replace people to complete more complex operations, while still achieving the purpose of saving corporate human resource costs and improving work results. The use of computer technology to imitate human behavior and thinking is called artificial intelligence. Artificial intelligence, technology covers a wide range of content, and is highly innovative and challenging. Its development is related to various disciplines including information and computing science, linguistics, mathematics, psychology, etc. The development goal of artificial intelligence is to use computer technology to replace dangerous or complex tasks that should be manually operated by artificial intelligence machines, so as to save labor, reduce accident hazards, and improve work efficiency and work quality. There are various forms of development of artificial intelligence [15-21]

First, artificial intelligence can help to improve some more complex problems or problems that cannot be solved at present. If a correct model cannot be obtained by computer calculations, artificial intelligence can be used to solve the problem. Effectively solve the problem and use artificial intelligence mode to continuously improve the quality of network usage in response to ambiguous problems and content. Second, artificial intelligence can complicate simple things or knowledge and obtain advanced programs and data that people want, thereby saving implementation and improving work efficiency. With the substantial improvement of people's living and production standards, higher demands are placed on science and technology. In recent years, the convenience and intelligence of artificial intelligence has been widely used in all walks of life. People have also attached great importance to artificial intelligence, which has extended its development path and has more technical personnel. It has also joined the exploration and development of artificial intelligence technology one after another, hoping that artificial intelligence technology can be improved in various fields. On

this basis, computer network technology has matured, and the application of artificial intelligence technology can improve the level of computer technology [22-23].

## 2. THE PROPOSED METHODOLOGY

### 2.1 The Physical layer of Computer Network Technology

The combination of computer hardware and software can make the firewall technology work and build a complete protective armor for the safe operation of the computer. The application of firewall technology is aimed at the safety of the entire computer network, greatly reducing the unstable factors caused by illegal intrusion from the outside world, and ensuring the safety of the computer. Especially in the current development background of the big data era, the advantages of firewall technology are more obvious. Preventing computers from being illegally invaded is the most important effect of firewall technology.

At present, people receive many spam emails and short messages every day, and some emails and short messages also carry harmful viruses. Once these spam and short messages are clicked on, it will cause virus intrusion and leak the original private information in the computer. Therefore, artificial intelligence technology is needed to help people identify information, scan emails for unsafe factors, and eliminate them immediately to prevent security accidents. For the hierarchical structure of computer networks, there are two main types: OSI's 7-layer reference model, which divides the computer network into 7 layers: physical layer, link layer, network layer, transport layer, session layer, presentation layer and Application layer, OSI model believes that these 7 layers can realize the basic functions of the computer network relatively independently, and at the same time, each layer can communicate with the upper and lower layers; the TCP/IP reference model, the formation of the TCP/IP reference model is mainly due to TCP/IP is a more commonly used and relatively mature network protocol in computer networks. Although the computer network layered by TCP/IP is divided according to the functions of the computer network, it is more simplified than the OSI reference model. Including: physical layer, data link layer, network layer, transport layer and application layer these five layers. From the above analysis and discussion, we can see that in the OSI 7-layer computer network reference model, the physical layer belongs to the first and lowest layer of the network, and is usually one of the most frequent layers of network failures. In this layer, the relevant interface function characteristics are defined, which are mainly reflected in the following four aspects: mechanical characteristics. That is, the size, shape, arrangement, etc. of an interface component are determined, so that the interfaces can better cooperate and cooperate to serve the upper layer; electrical characteristics.

### 2.2 The Application of Artificial Intelligence in Computer Network Technology

In the process of computer network security management, artificial intelligence technology is used to construct security measures, so that it can detect and screen confidence data through probability calculation, data statistics, memory recognition and artificial intelligence decision-making. In this way, it can further ensure that a large amount of calculation information is simplified during the matching check process, and promote the improvement of the recognition ability of network behavior characteristic values.

This kind of access can ensure more efficient control of data access to the network system, avoiding harmful harm to the network and threatening users with harmful information. The artificial intelligence security system can prevent the derivation and spread of viruses, prevent hackers and criminals from attacking computers, and can also impose management and monitoring on data information in the local area network, so as to ensure that the computer can be reduced if it is infected with a virus or a Trojan horse. Speed of spread and spread. I believe most people have already understood that the problem of hacker attacks is a common security problem in the operation of computer network systems. The emergence of this problem can easily leak user information, and lead to the existence of security risks, which can also cause financial losses in serious cases. Faced with this problem, relevant staff should actively introduce artificial intelligence into computer network security management technology to fully demonstrate the effective value of artificial intelligence. Specifically, the establishment of the database can be completed based on the reasoning mechanism of the computer. At the same time, the computer coding should be improved. In this way, the emergence of hacker attacks can be effectively avoided, and this can also enhance the data. The degree of information security has strengthened the security performance of the computer network system. Not only that, workers should also use artificial intelligence to identify input patterns of variation and noise, ensure that artificial intelligence can be effectively applied in computer systems, and promote the improvement of artificial intelligence work efficiency.

Online education has been widely recognized by virtue of its high utilization rate of learning resources, fierce teaching methods, and scientific teaching management. However, with the continuous promotion of online education, there has been a serious homogenization trend. Therefore, here we advocate a classroom teaching design that integrates lines, lines, lines, and thousands. Soldiers can break the boundaries of time and space in college teaching, and can combine the holistic and fragmented de-polarization of theory.

### 2.3 The Computing Network Optimization in the Era of Big Data

The computer network can exchange a large amount of data in real time, and given its unique dynamic characteristics of rapid transmission of data and information, the system can be quickly upgraded through artificial intelligence, strengthen the flexibility of the system during operation, and ensure the stability of the computer network. At the same time, it can analyze and process uncertain data information, which can promote the safety and efficiency of network operation. Adding artificial intelligence technology to the computer network can enhance the understanding of unknown information after the fuzzy logic processing is completed, and accelerate the rapid development of network supervision, network management and computers.

On this basis, the continuous improvement of network management mechanisms can also be achieved. While promoting the development of artificial intelligence in my country, the rapid development of artificial intelligence can also be achieved. Mass data information is the most distinctive feature of the big data era, and these data information has a high degree of complexity. Faced with this situation, the relevant staff should apply artificial intelligence in the computer data mining system, which can be specifically carried out from two aspects: First, the staff should strictly follow the relevant regulations when conducting data mining

work, and at the same time, When carrying out in-depth mining work, you should also make full use of related equipment to effectively ensure the accuracy of data information; but in daily life, the staff should actively learn the rules of computer intrusion to fully understand The system mode of invading the computer. At the same time, in this process, the staff needs to record the relevant data to avoid missing the relevant intrusion data information. In this way, the next time the external computer intrusion system is identified, the relevant work can be carried out more smoothly, and this also makes the operation of the high data mining system safe. The application of artificial intelligence in computer network security is embodied in firewalls.

From the actual situation of development, the security check efficiency of smart firewalls is higher than that of traditional firewalls, and it can handle the denial of service. Not only that, the firewall identification technology based on artificial intelligence can better distinguish and process the corresponding Data information, thereby effectively simplifying the processing flow of big data information, and standardizing a series of network behaviors.

### 3. CONCLUSIONS

In the context of the era of big data, strengthening the application of artificial intelligence technology in computer network technology can ensure network security, improve network system security performance, and comprehensively improve data information processing capabilities, and prevent computer systems from appearing in large amounts of data calculations. The phenomenon of collapse. As people's demands for network security increase, artificial intelligence technology should also change accordingly. Choose a reasonable artificial intelligence technology development model, effectively use big data technology to facilitate people's lives.

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