

Application of Artificial Intelligence System Based on Big Data in Computer Security Defense Platform

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Abstract: With the rapid development of computer technology and network technology, human beings have entered the era of intelligence. With the rapid development of artificial intelligence technology, big data, cloud computing, Internet of things and other technologies continue to integrate, which greatly changes the traditional way of work and life and provides many convenient applications and services. With the application of cloud computing, big data, data security of computer network and other issues, more and more attention has been paid. In order to improve the security of network, artificial intelligence technology is applied to computer network to ensure the security of data in the network.

1. Introduction

With the development of big data, cloud computing and artificial intelligence technology, we are facing an unprecedented technological change. The emergence of artificial intelligence technology has changed the traditional way of human cognition, expanded human intelligence, changed human work and life style, and made human enter the era of intelligent life rapidly. At the same time, with the development and application of big data, cloud technology and other technologies, network attacks are increasingly complex, and network security is facing higher challenges[1]. Therefore, there is an urgent need for a reliable method to quickly scan attacks and vulnerabilities and respond to system exceptions in time to effectively protect network security.

2. Overview of Artificial Intelligence

Artificial intelligence is a science and technology based on computer science, psychology, neuroscience, digital, biology and philosophy. Artificial intelligence is a new science and technology which studies and develops the theoretical methods and technical means used to simulate and expand human intelligence. Artificial intelligence did not come into being in the 21st century. It was born as early as the middle of the 20th century. And has been accompanied by computer technology, in the continuous improvement and development. In the 21st century, with the rapid development and application of big data technology, artificial intelligence technology has also been developed rapidly. The main purpose of artificial intelligence is to make the computer have the function related to human intelligence, and have the ability of automatic learning, analyzing and solving problems. At present, artificial intelligence technology has been widely used in various fields of society[2]. Using AI technology can transform and change traditional industries, reduce the cost of enterprises, and improve the level of decision-making and management. For example, education, law, speech recognition and image recognition technologies are applied in the fields of consumption and banking, security, retail and other industries.

3. The Development and Application of Artificial Intelligence

Now, the application of artificial intelligence technology has been greatly developed, including symbol computing, machine learning, image recognition, distributed artificial intelligence and so on. Today's artificial intelligence machines can not only perform complex mental work, but also assist human beings in logical operation, memory and other activities. At present, artificial intelligence is widely used in manufacturing, home furnishing, finance, retail, education, logistics and other industries.

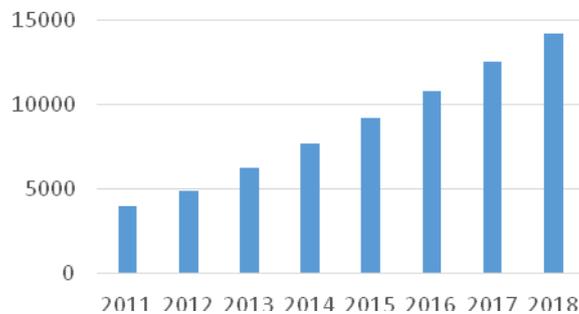


Figure 1 AI security trend

3.1. Smart Home

Smart home is a smart home environment based on Internet of things technology, which combines intelligent hardware and software system with cloud computing. Users can realize the remote control of smart home devices through the network, and improve and optimize the high energy saving, convenience and security of home environment through the mutual communication and self-learning between devices. In the future, with the development of Internet of things technology, the form of smart home will change greatly[3]. At the same time, the rise of artificial intelligence technology will accelerate the development and transformation of smart home. At present, the most basic artificial intelligence is especially suitable for smart home, for example, using network technology to intelligently control air conditioning, TV, washing machine, light, curtain, intelligent kettle, intelligent socket and other devices in daily life. Using these intelligent devices can make our life more concise and intelligent. With the development of the application, we can get the relevant data information through smart home devices and feed back to people. For example, we can intelligently remind people through the information such as the power on time of TV[4]. Further in-depth development can achieve the integration of human and computer, for example, through big data, to realize the interactive chat between human and computer, while chatting, analyze people's psychological state, and intelligently adjust the home equipment, such as adjust the light and play music according to people's mood state. Science and technology change life, the application of artificial intelligence technology in smart home industry is inevitable, it will promote the development and transformation of smart home industry rapidly.

3.2. Retail Applications

With the emergence of the convenience store, artificial intelligence is getting closer to ordinary people. Unmanned convenience store, using image recognition technology, face recognition technology, big data application and other technologies to realize the automatic processing of goods, in addition, it can also record the relevant data information of customers, carry out statistics and analysis, and provide data basis for enterprises to adjust operation strategy.

3.3. Intelligent Education

At present, many enterprises are gradually exploring the application of artificial intelligence in the traditional education industry. Through the image recognition technology, we can realize the automatic processing of examination and examination paper marking. In addition, through speech recognition, it can also realize human-computer interaction and other functions, and realize remote online question answering[5]. The integration of artificial intelligence into traditional education can

greatly improve the unbalanced distribution of educational resources and provide teachers and students with more convenient, efficient and more learning methods.

3.4. Application of Financial Industry

Financial industry is also the first industry to apply artificial intelligence. In the financial industry, the use of big data platform, combined with artificial intelligence technology, can accurately analyze and judge the customers of enterprises, make accurate risk assessment according to the results of analysis and judgment, and intelligently recommend relevant financial products to customers, greatly improving the conversion rate of enterprises.

3.5. Intelligent Security

Intelligent security is an important project in the construction of intelligent cities and towns in China. The combination of artificial intelligence and security products can realize the analysis of people, vehicles and behaviors. The integration with Internet of things technology can establish a comprehensive three-dimensional protection system for important places in the city.

3.6. Application of Artificial Intelligence in Medical Field

Artificial intelligence has been widely used in medical imaging, health management and medical research. In medical treatment, artificial intelligence can use its powerful data collection and analysis ability to make accurate decisions through in-depth diagnosis and treatment, so as to improve the accuracy of doctors' diagnosis and treatment. In the teaching and research of medical treatment, artificial intelligence technology is used to simulate some experiments in the course. In this way, the accuracy of experimental results is improved and the effect of education is improved[6]. In the aspect of health management, with its strong learning and analysis ability, we can learn and analyze the diagnosis and treatment records of patients efficiently and quickly, and provide doctors with alternative treatment plans. With the development of technology, the application of artificial intelligence technology in life will be more and more extensive, and will go deeper into every corner of people's daily life, work and study, providing great convenience for people's life.

4. Application of Artificial Intelligence in Computer Network Technology

With the rapid development of network, people have realized the importance of network security. How to effectively protect the reliability and security of data is the most important aspect of network security. In such a complex security environment, due to the intelligent information processing, symbol computing and other technologies of artificial intelligence, the network security can be fully guaranteed. Artificial intelligence technology can simulate human beings and carry out automatic operation. With its powerful data mining and analysis technology, the data in the network can be screened and processed efficiently and quickly. Therefore, artificial intelligence technology plays a very important role in computer network technology. It has been fully applied in network intrusion detection, intelligent firewall, intelligent anti spam and other aspects, and achieved good results.

4.1. Intrusion Detection

The biggest security threat of the network is the hacker's attack. Driven by interests, attack means emerge in endlessly. In the process of defense, we have to face many new means, methods and malware. With the help of artificial intelligence's powerful learning and memory ability and the powerful data analysis ability under the big data platform, we can check and screen the data files in the network, quickly and accurately find the risk, abnormal and malicious files Delete malicious files in the system in time to protect the security of computer network[7]. In addition, in the defense, we can also filter and analyze the abnormal traffic and other data information in the network, so that we can predict, detect and prevent most of the network attacks.

4.2. Intelligent Firewall

Firewall technology has been widely used in the security of computer network. The traditional firewall must rely on the administrator to set the relevant settings to work. For example, in the packet filtering technology, which packets are allowed to pass, which are not allowed to pass, etc. such security depends on the administrator. The firewall cannot intelligently analyze the packets, so as to judge which are normal packets and which are malicious packets. After the introduction of artificial intelligence technology into the firewall, the intelligent firewall can analyze the packets passing through the firewall by itself, and carry out intelligent processing. At the same time, through the integration with other technologies, it can not only reduce the amount of data calculation, but also expand the scope of data monitoring, more effectively intercept the malicious data in the network, so as to better protect the security of the computer network.

4.3. Spam Handling

In the network, the spread of virus and malware is mainly through web pages and email systems. In the anti spam system, the introduction of artificial intelligence can make use of its data detection, processing and analysis capabilities to achieve intelligent detection and identification of users' mail, timely detection of sensitive information and malicious data in the mail, and then intelligent use of corresponding protection measures to deal with spam, to protect users from the harassment of spam. Google said that with the help of artificial intelligence technology, the spam recognition rate has reached 99.9%. Using heuristic detection technology, spam can be identified according to the pre-set rules. Neural network technology forms a large collection of computers, which can simulate the neural cell network in human brain. Using neural network technology, spam can be identified and filtered.

4.4. Analysis of Network Data

In the network, in order to better manage the network, it is necessary to understand the information transmitted in the computer network in real time[8]. Usually, port image and other technologies are used to detect the amount of information in the network. At present, deep message detection system can be used to collect data flow and other information transmitted in the network. In view of the large amount of data and information collected, the super powerful learning, understanding and reasoning ability of artificial intelligence technology is used for rapid analysis, so that when there is a sudden problem, the problem can be found in time, and the causes of the problem can be analyzed, and the corresponding unreasonable data can be discarded, so as to effectively protect the network[9]. In a word, in the security of computer network, through the integration of various technologies, making full use of the powerful data mining function of artificial intelligence, applying it to computer network will greatly improve the security of network, so as to provide users with more secure and reliable services.

5. Conclusion

Artificial intelligence is the crystallization of human intelligence and an important development direction of science and technology in the future. Today, with the rapid development of network technology, such as big data and cloud platform, the security of computer network and the security of user information have become the most serious problems in the current network application. In the computer network technology, we should make full use of the powerful learning, understanding, analysis and reasoning functions of artificial intelligence, combine it with the existing network technology, and combine the artificial intelligence with the existing network technology Intelligent technology is applied to network technology to improve the security of computer network, so as to more effectively protect the data security and reliability of users, and protect people's life, work and learning.

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