Intelligent Application of Intelligent Technology in Network Security Defense

Lan Jiang*
Wuhan Polytechnic, Hubei, China, 430074

*Corresponding author e-mail: 403111106@qq.com

Abstract. Intelligent technology, which began to appear and gradually developed in the second half of the last century, is now in the forefront of science and technology and is the benchmark of the level of computer in a country. With the rise of intelligent technology, the network tends to be more and more open, the attacks are more and more intelligent, and there is a lack of security defense technicians. After the intelligent technology has been widely used in spam processing, illegal intrusion detection, expert system and other network security defense, the network security defense has become more secure and reliable than ever, and the security has been well guaranteed.

Keywords: Intelligent technology, Network security, Defense

1. Introduction
Network intelligence technology is produced and developed with the common development of social culture, economy and science and technology. Under the guidance of the slogan of "mass entrepreneurship and mass innovation", it has rapidly become the core component of "Internet". It has been used and innovated in various industries to varying degrees, so that people can enjoy the innovation results it brings [1]. Society is a big net, different science and technology is also closely linked together. Intelligent technology in today's social development plays an important role, but also thanks to the upgrading of industrial technology and computer field software, hardware rapid development. The advantages of intelligent technology in learning ability, judgment ability, selection ability and information processing ability enable it to carry out data mining in the data warehouse in big data's era without delay. In the face of very complex problems, it can also deal with freely and calculate more secure, reliable and repeatable verification results [2]. At present, smart technology is changing everything around us in an unprecedented way and speed, and serves as a user's guard in a more and more complex network security defense. Intelligent technology and its intelligent application in network security defense work can't be limited.
2. The Development and Evolution of Intelligent Technology
The origin of intelligent technology can be traced back to 1956. As showed in figure 1, its development process is long and tortuous, experienced the development period, recession period, stable period, now ushered in a breakthrough development. Unparalleled computing power and huge database are the two magic weapons of intelligent technology [3]. With these two advantages, intelligent technology stands out from many technologies, realizes cross-industry development, subverts many traditional ways of thinking and behavior, and brings creative and surprising results to people.

![Figure 1. Evolution route of Intelligence technology](image)

2.1 Pattern Identification
In the initial stage of the development of intelligent technology, the development of intelligent technology is slow, and it is in the stage of technological exploration and accumulation [4]. It is mainly to recognize simple symbols such as speech and image, which is a tentative simulation of human cognitive process.

2.2 Machine Learning
Intelligent technology machine learning is accompanied by intelligent technology, but after 1980, it broke away from the stage of simply imitating human cognitive process, developed towards bionic science, and tried to simulate the operation mode of animal neurons to achieve the purpose of efficient learning [5]. In the stage of data development, the accurate classification of data can be realized.

2.3 Deep Learning
After entering the new century, the concept of computer deep learning is put forward, that is, through the study of simple, discrete and independent data, the computer can merge and sublimate the received
data into a complex, comprehensive and related system, and the intelligent technology has since opened a new journey.

3. Network Security in the Intelligent Age

3.1 Network Security Threats Tend to Be Intelligent.
With the rapid development of network information technology and network big data, network security defense has been pushed to the top of the storm. Network attack also changes with the development of big data and intelligent technology, its concealment and scale have reached an unprecedented degree, once the balance between network attack and security defense is broken, network crime will be more rampant. Contemporary network security engineers are facing the dual challenges of security thought change and security means transformation.

3.2 Boundary Open Extension
The Internet + era, cyberspace is already not a city, a country has a clear security boundary, it is not like an industry has a certain scope, but it is connected to the whole world, open and comprehensive, the boundary is everywhere and there is no boundary. The open environment makes it possible to be attacked everywhere, resulting in network security risks, and it is difficult to take the initiative in defence. As shown in figure 2.

![Diagram showing network security threats]

Figure 2. Statistics on the proportion of sources of network attacks

3.3 Lack of Technical Personnel
The capacity of cyberspace is still expanding, and the speed of expansion is unimaginable. The influx of mobile devices, cloud services and so on makes the network security defense which is not facing difficulties even worse. Enterprise users have to increase network security maintenance personnel to deal with more and more network security risks and more and more complex and changeable network attacks, resulting in the lack of network security technical personnel.
4. Intelligent Application of Intelligent Technology in Network Security Defense

4.1 Spam automatic Detection Technology
From the wide popularity of the Internet, email has become one of the Internet tools that people often use, which brings a lot of convenience and popularity to people's life and work. Because of this, email has also become a bunker for cybercriminals. The influx of spam into e-mail has caused people to spend a lot of time picking out really important e-mails, and to accidentally enter the trap set by cybercriminals, causing economic losses and causing people a lot of trouble. Intelligent technology is applied to anti-spam detection system, which can intelligently analyze the comprehensive information of mail, intercept or warn spam, and help users to improve the security of using e-mail.

4.2 Intrusion Detection Technology
The application of intelligent technology in intrusion detection has a wider space to play, it can fuzzy recognition of intrusion information, so that covert attacks have no hidden form. At present, the occupation of resources by intelligent technology is very small, many users use intelligent intrusion detection software, quickly judge the network virus and rogue software, accurately alarm or delete, effectively strengthen the network security defense ability.

4.3 Expert System
Taking the knowledge and rich experience of experts in network information technology, network security defense and other related aspects as the database, the network security engineer edits and marks the intrusion and attack, and forms a huge database. The network security administrator compares the suspicious intrusion information and the database one by one, and adds the new intrusion feature information into the database, so that the database is constantly enriched and helps to improve the network security defense function.

5. Conclusion
China has taken the lead in putting forward a global community of Internet destiny, advocating Internet connectivity and information sharing, and creating a network environment conducive to all countries and regions in the world. The premise of global interconnection is that we inevitably have to face the common threat from network security. Only when the network security defense is in place, security is guaranteed, connectivity and common development can be possible. The application of intelligent technology in network security defense effectively controls the risk of network security and provides a powerful security guarantee for the construction of the community with a shared future on the Internet in the world. With the deepening of intelligent technology research and the increasing application of intelligent technology, the future of network security defense will be brighter.

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