Application of Artificial Intelligence Technology in Electronic Information Engineering

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Abstract: In recent years, due to the increasing level of research and development of science and technology, the development trend of artificial intelligence (AI) gradually expanded. Electronic information technology also combines electronic information engineering and high technology to further promote the development of electronic information engineering. This paper takes the introduction of high technology as the starting point, introduces the relevant basic knowledge of electronic information technology, and discusses the use of high technology in electronic information engineering. The article also showcases the practical applications of artificial intelligence in electronic information engineering, such as the hierarchical structure of self-organizing networks, and routing tables and protocols. These suggestions highlight the value of electronic information technology in maintaining internet security, big data processing, and software and hardware updates.

1. Introduction

At present, the development trend of China's electronic information technology has attracted great attention from the world. The continuous progress of electronic information technology in China helps to enhance the market competitiveness of China's products and the country's inclusive national strength. In this way, every developing country attaches great importance to the development of electronic information technology in order to enhance the market competitiveness of its products. Due to the continuous progress of electronic information technology, artificial intelligence technology has also achieved a qualitative leap from implementation to development, supporting the integration and development of various industries [1]. Electronic technology has gained widespread use and has gradually penetrated into human life. The fusion of artificial intelligence and electronic information technology provides a variety of human services for human production and life. The integration of artificial intelligence and electronic information technology has not only greatly improved the level of automation and intelligence of telecommunication information technology, but also significantly improved the quality of human existence, which in turn has promoted the rapid growth of social productivity.

2. Related Theoretical Knowledge

2.1. Overview of electronic information engineering

Electronic technology is dependent on the characteristics of modern networks and is an information tool for collecting technology in all areas of life [2]. Today, in this era of high human civilization and the flourishing of information technology, electronic technology is beginning to penetrate into educational psychology, the computer industry, and various fields of engineering. Therefore, in the design and use of electronic products, electronic technology is mainly based on modern artificial intelligence means. The reason is that it not only gives electronic products human thoughts and similar functions, but also adds the magic of technology, fashion features, and new modes of thinking outside of human beings to electronic products [3].

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2.2. Artificial intelligence overview

Artificial intelligence mainly refers to the reproduction of human-based behavior accomplished through the intelligent simulation of people and independent of the self-control of the human body through various technical means [4]. It not only relies on computer science, but also needs the help of engineering technology, linguistics and other professions to realize the control of artificial intelligence programs and complete the reproduction of people's actions and thoughts. And with artificial intelligence, people are also able to perform tasks that humans can perform without having to perform specific behaviors directly [5]. Thus, intelligent robots have the ability to replace people for a wide range of tasks and mimic human actions.

However, the development of artificial intelligence has gone through an arduous process. The definition of artificial intelligence technology, originally devised by some physicists around the 1950s, evolved to its current state after three changes [6]. The first advance in artificial intelligence was the replacement of human computers with intelligent robots. This was the first real application of artificial intelligence. The second later development was the accuracy of artificial intelligence based on environmental control, which also contributed to the development of computers. We achieved a breakthrough in artificial intelligence. The third was to conduct big data analysis and develop electronic information network methods in computer science to bring computers and data into close contact.

2.3. Characteristics and development of electronic information engineering

Due to the rapid development of today's society, many developed countries have put the research of message electronic technology in the key position of promoting the development of the national economy of the whole society. The current comprehensive national strength of China is growing, which is also inseparable from the development of China's electronic information industry [7]. However, the message electronic engineering is not a single profession that is closely linked to the development of science and technology by numerous projects. Due to the development of computer technology, electronic information engineering works in a constant state of development. But at the same time, electronic information engineering involves many application areas, is an important reflection of the current level of science and technology. Modern electronic information engineering mainly uses the currently developed methods of computer science and network science and technology to scientifically manage electronic information materials and other data resources and turn them into a socially available electronic product information system.

In recent years, although the development of electronic information technology in China has progressed rapidly, and the application and stability have been greatly improved, there are still many problems. The industry also needs to pay close attention to the actual development, otherwise this problem will be aggravated and the development of electronic information technology will be limited. The first problem is the financing of investment in the electronic information industry. At present, because certain sectors do not realize the importance of electronic information technology to the development of the national economy, they often ignore its existence in its development and do not invest enough in related science and technology, thus failing to effectively optimize the modernization process of China's electronic information technology. Although some companies have realized the need for this technological innovation, they still lack effective capital and resources to help them, which will also have an impact on the development of this electronic information technology. Second, China has been lacking in innovation in the field of electronic information in recent years. Although China has made a number of inventions in relevant fields in recent years, at the core technical level, many basic contents still need to be imported from foreign countries. There is a lack of basic patents in China. Moreover, due to the insufficient accumulation of science and technology in this field, China's innovation in electronic technology has always been insufficient in recent years, and China has repeatedly followed the path of foreign countries, which greatly limits the development of this technology.

2.4. Characteristics and development of artificial intelligence

There are some similarities between the differences in computer and electrical information engineering. It is not just a field, but an important field that integrates aspects of computer science, information technology, engineering psychology, and electronic control technology. It is developed through the integration of current computer electronic science and technology. Therefore, computer research has been a key area of current research in China and has a high research potential for future development. In the future, computers have many advantages. First, modern information technology must be able to truly communicate with people. Using AI technology, it will be possible to create a convenient way for humans to communicate, allowing viewers to "stay at home and learn about the world". Moreover, artificial intelligence technology is not only applicable to the public, but also has great benefits for enterprises, which can accelerate the achievement of economic goals.

The development of artificial intelligence technology has also gone through a long time. However, the development has gained momentum in recent years. Thanks to the first international electronic computer, he successfully completed the machine operation of addition. The success of this technology has also led many experts to devote more effort to this area and its technology is constantly being innovated. This would be the first stage of computer research. Of course, due to the rapid development of computers, human exploration in the computer will continue to advance. The past mechanical imitation of the present artificial intelligence thinking is still facing a lot of difficulties, but artificial intelligence technology will continue to develop and expand.

Artificial intelligence can be considered as an emerging technology after information technology such as locomotive, electric power and network. Currently, it is generally widely used in industries such as medicine, banking, education, automotive industry, and new retail [8]. Therefore, in addition to simulating human cognitive transfer in teaching, AI teachers can use bio-monitoring technologies such as skin conductivity, facial expressions, body posture, and music volume to understand students' learning emotions. The intelligent mobile learning management system developed by Pittsburgh College in the United States monitors the ability of the learner's mind to focus and adjusts decisions to assist the teacher in improving learning outcomes.

As a new discipline, with the development of a new generation of AI technology, the use scenarios will be enriched and will contribute to the sustainable development of the technology it supports [9]. The scope of the artificial intelligence market is gradually broadening, and will eventually enter the "age of intelligence". As a pioneer of new technologies in the Internet era, the new generation of artificial intelligence will gradually become more integrated with electronic information technology and penetrate more industries. It is important to spread the concept of "next-generation artificial intelligence" to enhance the ability to use related technologies to deal with real-world problems. In the new development period, we should realize the innovation of theory and practice in order to achieve a seamless connection between electronic information engineering and high-tech development period. In the future development trend, we also need to focus on new contents such as face recognition, smart home and voice interaction.
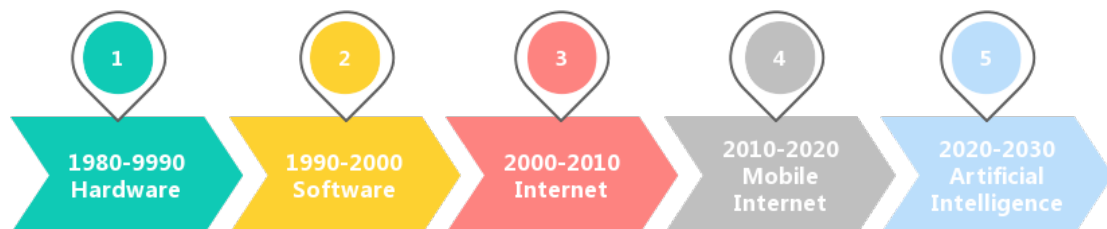

Figure 1. History of Artificial Intelligence

3. Application of Artificial Intelligence in Electronic Information Engineering

At present, due to the increasing development of electronic technology, artificial intelligence helps to improve the accuracy and efficiency of intelligent production operations. It is also able to propose certain reference for downstream researchers so that the field of electronic information

technology in China can carry out deeper analysis in the process of research and development, and eventually realize the high-speed development of electronic information industry and artificial intelligence technology [10].

3.1. The use of network information security technology

When conducting research work in the field of cybersecurity, one inevitably decides to utilize artificial intelligence and enhance product security through artificial intelligence technologies. During the design and development phase of AI products, it becomes necessary to increase the cyber security factor to ensure the security of subsequent applications of electronic technologies. However, due to the influence of electronic computer technology, if people still choose to use traditional protection methods, we simply cannot deal with the security problems at this stage, and some difficulties will be exposed in the process of use. Therefore, in order to maintain the security of the Internet information system, people must improve and optimize the protection measures in order to give full play to the inherent functions of electronic information technology more effectively and bring greater security protection to the safe operation of the Internet.

3.2. Data acquisition and parsing technology

The greatest advantage of applying artificial intelligence in modern electronic information technology is the high concentration of data. Therefore, it is necessary to use the current environment as a breakthrough to highlight the superiority of electronic technologies and to discover new values hidden in big data and improve data collection and analysis techniques. Based on big data analysis, compared with previous data mining techniques, it will have higher processing speed and larger information storage capacity, thus enabling faster management of information. Therefore, the use of efficient electronic information measurement equipment can greatly improve efficiency, promote the analysis and management of information technology in real-life applications, dig deeper into the real value of data analysis, and improve work efficiency.

3.3. Hardware and software upgrade technology

In the field of industrial electronics and information technology, the application and management of software and hardware can be carried out efficiently through artificial intelligence technology. There have been many successes in using AI in software and hardware maintenance and upgrades. Therefore, it can monitor and analyze whether each application software needs to be repaired and updated through the artificial intelligence system, thus making it possible for the user software to be upgraded and analyzed. Once it is confirmed that the software product used by the user must be replaced or updated, the corresponding alert will be issued for the user, and the user can replace and upgrade according to his own wishes. Unlike today's electronic technology software, it requires the most efficient programming software to design the appropriate control programs for the most accurate drive control. It has already been implemented in some online libraries, lathes and other related sectors. For example, some universities in China have also built intelligent Internet libraries. Students can walk into the library and check out books according to their needs. The electronic information technology software can realize the query of the corresponding books according to the book borrowing requirements provided by the school. Students can query and load the corresponding materials from the massive information of the book library. This has effectively enhanced the informationization level of the book library.

3.4. Network resource sharing technology

In addition to the above three points, the main advantage of AI in network electronic information is also shown in online sharing technology, that is, giving full play to the advantages of the new generation of AI in terms of speed and accuracy. Therefore, in the sharing technology, through its technology can realize the creation of sharing of each application. At the same time, through the use of artificial intelligence and its integration, to obtain the rich information on the Internet, so as to achieve the timeliness and control of information. Nowadays, the issue of Internet security has become a subject of our concern. Therefore, at present, artificial intelligence must help electronic

information technology to create cyber security systems that are effective and adequate enough to prevent illegal intrusions. The most appropriate and quickest solution when a data security crisis occurs.

4. Examples of Artificial Intelligence Applications in Electronic Information Engineering

4.1. Networking method

The new mobile Internet is used for communication between submarine nodes, as shown in Figure 2. Between nodes A and E, data and transmission in the Internet is carried out through these infrastructures. It is completely different from Figure 3. In the original network, if the communication capability of the nodes is exceeded, the infrastructure is re-partitioned and therefore the communication project cannot be realized. However, in autonomous underwater systems, nodes can have the ability to spontaneously issue routing tables, and the ability to communicate between nodes A and E is accomplished through a multi-hop approach.
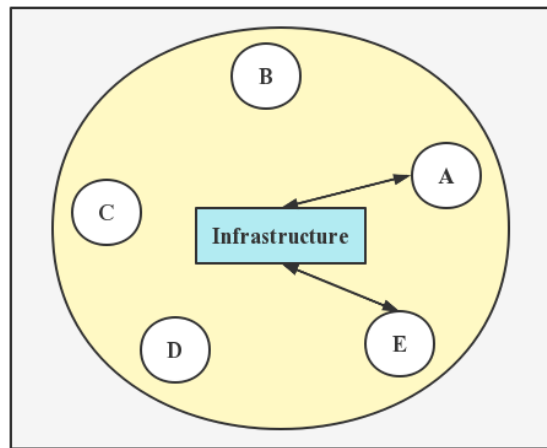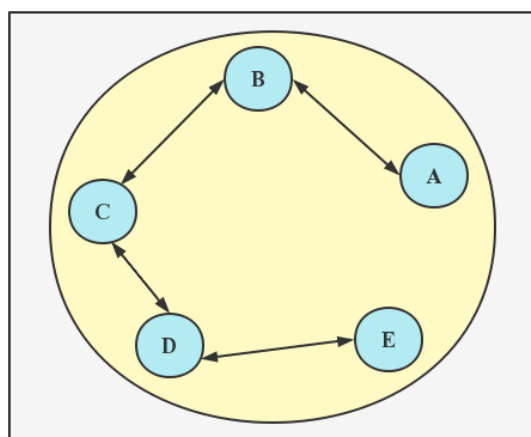

Figure 2. Mature Network with Infrastructure

Figure 3. Self-organizing Network without Infrastructure

4.2. Self-organizing network hierarchy structure

The so-called self-organizing network mainly uses a hierarchical structure consisting of several clusters. Each network cluster contains a module head and several cluster members. These cluster heads can not only perform higher-level networking and distribution functions, but also network with other subnetworks, which can also use cluster heads to accomplish communication.

4.3. Routing tables and protocols for the self-organizing network

Most of the communication between LANs uses routing method. The routing table is related to the multi-site communication method. As shown in Figure 4, by updating the routing table structure, it is possible to achieve normal self-organized communication over the LAN.
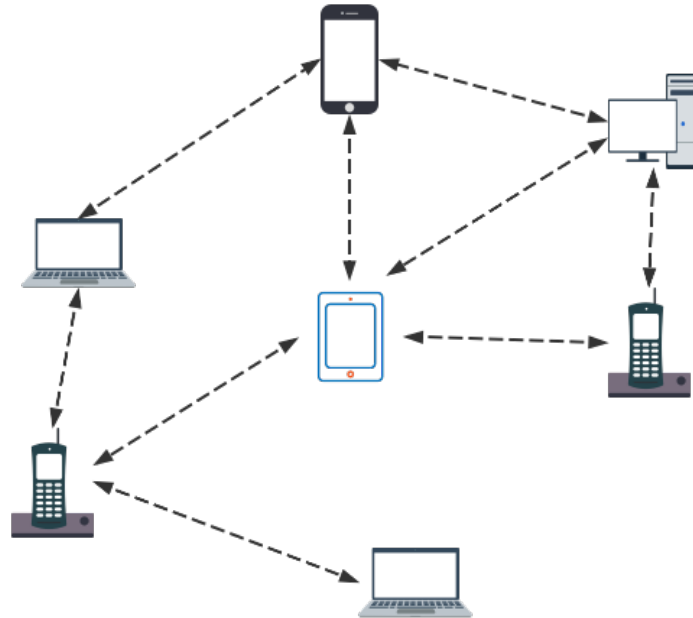

Figure 4. Communication Model of Wireless Self-Organizing Network

The biggest advantage of its application is the ability to reduce the infrastructure needed to run the traditional Internet, while enabling temporary networking through several independent nodes. At the same time, Internet nodes are able to change their topology and establish new data transmission paths during mobile time. Mobile organizational networks are also able to bring more flexible solutions to small mobile devices or wireless units. The route establishment, selection and protection are also the most critical functions in the operation of underwater networks.

5. Conclusion

The features that have been seen in the process of the widespread use of electronic technology are digitalization, efficiency and automation. Therefore, if an electronic information application is to fully demonstrate its functionality, it needs to master and utilize this functionality well. At present, although electronic computer technology is capable of long-term development, at this stage the means of processing data are relatively simple and there is more room for increasing the speed and stability of data. At this stage, artificial intelligence information systems have been fully utilized in all aspects of electronic information, which also ensures stability and sustainability on the path of growth. In the next project, research on artificial intelligence technologies should be enhanced and may require more than just electronic information technology to provide better services to people.

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