Application of Artificial Intelligence Technology in Electronic Information Engineering

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Abstract. The word "artificial intelligence" has appeared more and more frequently in our life in the past two years. More and more intelligent products have entered our ordinary people's homes. The new technology represented by artificial intelligence technology has gradually become the key force driving China's economic development. The integration of artificial intelligence and electronic information technology has become an inevitable trend. Electronic information engineering must be transformed, relying on artificial intelligence technology to walk in the forefront of upgrading and development. Based on the literature research method, After consulting a lot of literature about AI technology and electronic information engineering, and concludes that under the background of artificial AI technology, the scale of electronic information manufacturing industry is steadily expanding. It shows a steady growth trend. According to the big data platform, The trade volume of China's electronic information industry is as high as 9.3 trillion, an increase of 11% Compared with the previous income scale, with the support of AI technology, the development of electronic information engineering will be even more powerful.

Keywords: Artificial Intelligence, Electronic Information Engineering, BP Neural Network, Literature Research Method

1. Introduction
With the progress of the times, the development of science and technology, artificial intelligence is no longer a new thing. The emergence of this technology has attracted the increasing attention of researchers from many disciplines and different professional backgrounds, and has become a widely interdisciplinary frontier discipline. Today's world is based on science and technology, AI technology has been paid attention to. Artificial intelligence has been rapidly spread and developed in the world, and promoted the development of other disciplines. At this stage, people are keen to integrate artificial intelligence into the development of various industries. Of course, information electronic engineering technology is no exception. Experts and scholars are exploring how to skillfully integrate the two, relying on AI technology, to help the growth of electronic information better and faster.

Artificial intelligence is gradually integrating with human life, various production activities are being replaced by artificial intelligence, and people's lives are gradually becoming more intelligent and
easier. Eman believes that the combination of electronic information engineering and artificial intelligence is the crystallization of human wisdom and promotes the progress of human society to a certain extent. Since China joined the World Trade Organization, China's national strength and development have entered another stage of rapid development, and the combined development of electronic information engineering and artificial intelligence has also become an inevitable trend [1]. Huang's third scientific and technological revolution led to the rapid development of human science and technology. Internet technology and artificial intelligence technology not only promoted the modernization of electronic information technology, but also greatly expanded the application range of electronic information technology. Make it gradually penetrate into all aspects of human production and life [2]. Zaijian believes that in recent years, artificial intelligence has gradually entered people's lives and become a new scientific and technological representative sought after by all walks of life in the electronic information age. The emergence of artificial intelligence and its new products, industries and systems has changed people's cognition and obviously changed people's lives. The combination of these two technologies can shorten the design cycle of electronic information technology, electronic information industry will be in sustainable development [3]. Although the talk about AI technology and electronic information technology is in the situation of a hundred flowers blooming and a hundred birds are contending, no one has created a good structure for the integration of the two.

Based on the literature research method, this article reads a large number of literature on artificial intelligence and electronic information engineering, and makes a certain description of artificial intelligence technology, and collects data. Based on a deep understanding of the characteristics of electronic information engineering, combined with the availability of data, Selecting indicators that can reflect the factors forming the competitiveness of the development of electronic information engineering under the background of artificial intelligence, which not only highlights the main factors forming the advantages of artificial intelligence, but also takes into account the analysis of the complex environment faced by the development of electronic information engineering.

2. Method

2.1. The Reasons for the Emergence of AI
Artificial intelligence was born in the information age. In the research process of artificial intelligence, people always try to create some kind of intelligent machine that can respond to various stimuli. The emergence of artificial intelligence technology is accompanied by the development of computer technology and gradually powerful, the use of computer technology to solve the problem of artificial intelligence, and then produce a similar human intelligent machine. From the perspective of semantic analysis, artificial intelligence is a combination of two language units, "artificial" and "intelligence" [4].

Artificial intelligence allows intelligent machines to simulate human intelligence through scientific research. The expected research results mainly include the principle of information perception and a computer constructed similar to the human brain. At the same time, because artificial intelligence contains a wide range of problems, it includes many disciplines. Therefore, the study of artificial intelligence is a very comprehensive science. So in other words, artificial intelligence can be defined as a tool that helps or replaces human thinking. This smart tool is integrated in the form of a computer program. It can exist independently in the data center or can be integrated by robots and other equipment. At the same time, artificial intelligence has the potential to acquire and purposefully apply knowledge and skills in a specific environment [5].

2.2. The Wide Application of DSP in Signal Information Processing
The emergence of integrated digital DSP signal transforms the real world original analog electronic signal into corresponding digital signal processor to execute different digital signal processing algorithms. It also continues to expand the range of digital signal processing by continuously improving the performance of DSP equipment [6], and using DSP for signal processing, especially
real-time signal processing, has become a new hot spot of current and future technology development. In the process of data processing, DSP reads AD sampling results when interrupt [7].

The high digital signal processing speed of DSP devices and the convenient design of interface with regional signal processing circuit make it more and more widely used in signal processing, especially in real-time and high-speed signal processing. Therefore, the combination of DSP processor and microcomputer, making full use of powerful computer functions and high-speed signal processing ability, can better carry out artificial intelligence calculation and accelerate the further development of electronic information technology projects.

2.3. Development History of AI Technology

AI technology is also known as artificial intelligence. The development and technical route of artificial intelligence rely on high-end talents. To the present science and technology, artificial intelligence technology related research is in a critical period, the characteristics of this period in the primary stage of the development of artificial intelligence is reflected incisively and vividly, that is, the gradual transformation from the laboratory to the market. Although all kinds of cutting-edge technologies have begun to appear, they have not yet fully matured and formed the relevant technical system. If artificial intelligence wants to develop and is in a good development trend [8].

The emergence and development of artificial intelligence is for computers to help humans reduce mental labor in the fields of calculation, analysis, and decision-making. Today's artificial intelligence equipment has far exceeded the ability of the human brain to process sample data, which makes the complex mental work that humans could not achieve in the past can be easily completed by artificial intelligence. In the future, artificial intelligence technology will break the law and speed of biological evolution, and through deep learning intelligent machines can continuously improve themselves and become more intelligent and powerful [9].

2.4. Process Design of BP Algorithm

The realization of BP neural network is mainly software programming, the design of hidden layer, the number of hidden layer nodes needs to be obtained from sample data, and its function is to store the internal laws of the network. However, the choice of the number of hidden layer nodes needs to be reasonably selected based on the number of network sample data and other factors. If the number of nodes is too small, the training results cannot fully reflect the law of the sample; if the number of nodes is too large, other content may be changed. Keep in mind, thereby reducing the training speed and generalization ability of the network [10].

\[ m = \sqrt{n+1} + \alpha \] (1)

n is the number of nodes in the input layer of the BP network, and L is the number of nodes in the output layer of the BP network, \( \alpha \in (0,10) \) is a constant.

2.5. Definition of DFT

DFT is a discrete time and frequency Fourier transform. Parallel to serial conversion technology is to convert the original serial data to parallel transmission data at a higher working speed, reduce the speed, and then distribute it to different subcarriers for continuous transmission. In this way, the period of each data symbol is increased, and the percentage of delay caused by multipath to each symbol is reduced, so as to improve the anti multipath ability of the system.

It is defined as follows:

\[ X(k) = DFT[x(n)] = \sum_{n=0}^{N-1} x(n)e^{-\frac{2\pi}{N} nk} = \sum_{n=0}^{N-1} x(n)W^{nk}_N \] (2)

Conversely:
$$X(n) = \text{IDFT}[x(n)] = \frac{1}{N} \sum_{n=0}^{N-1} x(k)e^{\frac{2\pi jnk}{N}} = \sum_{n=0}^{N-1} x(k)W_N^{nk}$$

(3)

3. Experiment

3.1. Literature Research Method
Through the collection and sorting of literature related to artificial intelligence and electronic information engineering research. Through the arrangement and research of the existing materials, a clear idea is provided for the formation of this thesis, and finally a reasonable framework structure is formed and finally written.

3.2. Data Analysis Method
Through the questionnaire, use social media to spread, collect everyone's views on artificial intelligence technology and electronic information engineering technology, and ensure the validity of the data, for the artificial intelligence itself as an interdisciplinary, it needs to use certain experimental scientific analysis methods. Therefore, qualitative and quantitative analysis of data is necessary.

4. Discussion

4.1. Pct Patent Application Trends in the Context of Artificial Intelligence
With the continuous increase of my country's emphasis on and investment in technology patents, the number of China's PCT patent applications and the proportion of global PCT applications have shown a rapid growth trend in recent years.

![Figure 1. Statistics of China's Pct Patent Applications in The Past 4 Years](image)

From Figure 1, we can see that China’s PCT patent applications have shown a straight upward trend in the past four years. From 8,000 applications in the beginning to 15,000 in 19 years, the number has directly doubled. In terms of number, the proportion has also doubled from 5% at the beginning to 11% in 19 years, and the proportion has directly doubled. This shows that with the support of artificial intelligence technology, the development of electronic information engineering
has shown a great Prosperous attitude.

4.2. The Role of AI Technology in Electronic Information Technology

For deep learning, the neural network can be understood as a learning architecture method. The complex network structure that overlaps and is difficult to analyze the law is used to characterize and learn huge data. The complex network structure is as complicated as the neural structure of the human body. However, It is this complex "structural relationship" that answers "1+1=2", although it will not show people how it "thinks" out "1+1=2"-this is also artificial intelligence. The magic. The application of artificial intelligence neural network technology in electronic information technology can achieve complementary advantages in resources.

Figure 2. The Role of AI Technology in Electronic Information Technology

The traditional network information security maintenance can not keep up with the development of modern electronic information technology. If we want to solve the security problem of artificial intelligence network scientifically, we must adopt an effective model to maintain the security of artificial intelligence network. The processing of massive data in modern society has led to the emergence of big data technology, and the integration of big data and electronic information technology will become an inevitable trend. In order to develop electronic information technology, a large amount of data must be collected. Artificial intelligence can realize these functions. In the process of software system and equipment upgrading and maintenance, artificial intelligence technology will send system maintenance or upgrade alarm to users through information technology, so that users can use scientific and reasonable methods to maintain the system according to their own needs.

4.3. Advantages of My Country's Electronic Information Industry Development under the Background of artificial intelligence

Table 1. 2015-2019 My Country's Above-Scale Electronic Information Manufacturing Business Revenue (Unit: 100 Million Yuan)

| particular year | 2015 | 2016 | 2017 | 2018 | 2019 |
|-----------------|------|------|------|------|------|
| amount of money | 51300| 63900| 76800| 89400| 93500|

In the context of artificial intelligence technology, the scale of the electronic information manufacturing industry has steadily expanded. Shows a steady growth trend. According to the big data platform, in 2019, the total sales revenue of my country's electronic information industry reached 9.3 trillion yuan, an increase of 11% compared with 2018. Among them, compared with the previous revenue scale, in artificial intelligence technology with support, the electronic information industry will develop better.
4.4. Benefits of Combining Artificial Intelligence and Electronic Information

![Benefits of Combining Artificial Intelligence and Electronic Information](image)

**Figure 3.** Benefits of Combining Artificial Intelligence and Electronic Information

In today's rapid development of science and technology, artificial intelligence is no longer what is only written in science fiction, high-tech technology is gradually entering the home of ordinary people. The advantage of artificial intelligence technology is that it can deal with data problems well. In the development of electronic information technology, those fuzzy data can be well solved with the support of artificial intelligence technology. The speed of data updating will be faster. The rapid updating of data can make the development of electronic information technology in the forefront, and artificial intelligence can also be used to a certain extent Control computer, improve work efficiency. In any case, the combination of the two will bring certain technological changes. Although the development of a thing is certainly two-sided, the advantages outweigh the disadvantages for the two.

5. Conclusion

AI technology is in the ascendant, social economy and people's life are deeply affected by it. Behind the hot topic is how to effectively introduce technology into the industry, improve production efficiency, broaden development paths, and create economic benefits and social value. For electronic information engineering, the opportunities brought by this intelligent revolution far outweigh the challenges. Artificial intelligence technology does not appear solely and independently and influence the development of electronic information technology, but is accompanied by other concepts or technologies such as the Internet, big data, sharing economy, humanistic concepts, etc., and deepens industrial development from multiple dimensions. The guidance and influence on the thinking concept are far-reaching and long-lasting, and it is the key to determine the long-term development of the industry. The development of electronic information technology is never technology for technology, technology is a means rather than an end. The role of technology on content resources is the foundation, and the impact on products and services is performance. Innovating business models and driving the industry to create economic benefits and social value is the focus. As the industry introduces more technological means and more products and services, there will be more and more regulatory issues. Regulating and standardizing the application of technology in terms of policies, regulations and social ethics is a guarantee for the in-depth development of technology in vertical industries. All in all, artificial intelligence technology is an opportunity for electronic information engineering. It is believed that the integration of the two will develop better and better in the future.

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