

Research on the Development and Application of Computer Artificial Intelligence Identification Technology

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Abstract: At present, many branches of computer science research have emerged, among which artificial intelligence is a very popular topic in the entire computer science field. With the development of science and technology in recent years, computer artificial intelligence recognition technology has gradually been applied to people's daily life. In order to deepen the public's understanding of intelligent recognition, this article studies its development process and application. First introduced the concept of artificial intelligence and its 5 development stages, and then gave an overview of computer artificial intelligence recognition technology. We explained its concept, development status and key technologies, and then analyzed its applications, including its five application types and current problems in voice recognition and visual recognition applications. In the context of today's information technology, only the shortcomings are overcome can make artificial intelligence technology mature.

1. Introduction

The realization of computer artificial intelligence recognition technology depends on the research and support of image recognition, language recognition, robotics and other aspects [1]. In the specific operation process, computer artificial intelligence recognition technology is mainly through certain recognition device, which automatically recognizes and obtains the relevant information of the item, and then the identification device transmits the identified and collected information to the background computer system for processing. The generation and application of this technology provides automatic office and intelligent production, etc. This has made it possible to bring great convenience and efficiency to people's lives and productions [2].

2. The concept and development of artificial intelligence

2.1 The Concept Of Artificial Intelligence

The term "artificial intelligence" was first proposed at the Dartmouth Society in 1956. Since then, researchers have developed numerous theories and principles, and the concept of artificial intelligence has also expanded. Artificial intelligence (AI) is mainly used for simulating, extending, and expanding human intelligence's theory, methods, technologies, and application systems for research and discussion. At present, artificial intelligence does not have a clear definition, but no matter what it is, it is a branch of computer science. It attempts to understand the essence of intelligence and produce a new kind of intelligent machine that can respond in a similar way to human intelligence.

There are two ways to implement artificial intelligence. One is to use traditional programming techniques to make the system appear intelligent, regardless of whether the method used is the same as that used by the human or animal body [3]. This method is called engineering, it has achieved results in some fields, such as text recognition, computer chess, etc. The other is simulation method, which not only depends on the effect, but also requires the implementation method to be the same as that used by humans or biological organisms.

2.2 Development of Artificial Intelligence

The research on artificial intelligence can be divided into five stages.

The first stage is the rise and neglect of artificial intelligence, this time is in the 1950s. This stage is the initial stage of artificial intelligence, the concept of artificial intelligence was first proposed, and a number of scientific and technological achievements have emerged in succession, such as proof of machine theorem, checkers program, lisp table processing language, etc. Since artificial intelligence is in its infancy, there are defects in many places, coupled with the failure of translation of natural language, and many other reasons, the development of artificial intelligence fell into a trough. At the same time, the artificial intelligence research at this stage has a very obvious characteristic: the method of problem solving is overemphasized, but the importance of knowledge is ignored.

The second stage is from the late 1960s to the 1970s. The emergence of expert systems has once again pushed the research of artificial intelligence to the climax. Among them, the more famous expert systems are DENDAL chemical mass spectrometry analysis system, MTCIN disease diagnosis and treatment system, Hearsay-11 language understanding system, etc. [4]. The emergence of these expert systems indicates that artificial intelligence has entered the stage of practical application. At the same time, the International Artificial Intelligence Federation was established in 1969.

The third stage was in the 1980s. This stage was accompanied by the development of the fifth generation computer, and the research on artificial intelligence has also made great progress. In order to enable the speed of inference to reach the speed of numerical calculations, Japan began the "Fifth Generation Computer Development Program" in 1949. Although this program ended in failure, it brought another wave of artificial intelligence research.

The fourth stage is the late 1980s. 1987 was a year of the emerging science of neural networks. In 1987, the first international conference on neural networks was held in the United States, and the birth of this emerging science was announced to the world. Since then, the investment in neural networks in countries around the world has also gradually increased.

The fifth stage is after the 1990s. The emergence of network technology has provided a new direction for the research of artificial intelligence. The research of artificial intelligence has shifted from the research of a single intelligent agent to the artificial intelligence research distribution based on the network environment. At this stage, artificial intelligence not only researches distributed problem solving based on the same goal, but also researches multi-objective problem solving of multiple intelligent agents, so that artificial intelligence has more practical uses [5].

3. Computer artificial intelligence identification technology overview

3.1 Concept

Intelligent identification technology refers to computer systems and scanning equipment, camera technology, etc., and intelligent identification of target instructions and data information, which can fundamentally meet the needs of intelligent identification in the current era. The earliest origin of artificial intelligence identification technology in China is speech recognition technology. The main function of speech recognition technology is to control the mobile phone to meet the actual needs of the society. In the specific operation stage, it is mainly recognized by voice, and then the voice content and mobile phone instructions are compared and analyzed in order to make accurate and scientific choices. The implementation and application of artificial intelligence recognition technology can promote and strengthen people's over-reliance on mobile phone operations. At the same time, it can reduce workload and improve operation efficiency in order to meet the development needs of the current era.

3.2 Development Status

At present, the research and development and application of artificial intelligence identification technology in China are still in the development stage, and there is no very complete and mature

technology system compared with foreign countries. At the same time, various countries have initiated exchanges and cooperation on artificial intelligence identification technology, which has brought new opportunities for developing artificial intelligence identification technology for China. Through continuous practice and research and development, the level of artificial intelligence recognition technology has significantly improved, and at the same time it has brought many conveniences to people's work and life and improved their living conditions. In addition, relevant departments in China have paid enough attention to artificial intelligence recognition technology. A large amount of capital has been invested and the market size has been continuously expanded. The market size was 1.6 billion yuan in 2016, increased to 2.1 billion yuan in 2017, and 2.6 billion yuan in 2018, and it is expected to exceed 4 billion yuan in 2019 and 2020. However, artificial intelligence identification technology still faces problems in the process of practical application, and there are some gaps with the overall level of foreign development.

As far as current development is concerned, the application of computers in various fields is very wide and the scope of popularization is becoming wider and wider. People are paying more and more attention to the problems of network information security. Therefore, it is necessary to increase the importance of network monitoring and network control. To correctly understand its important role in accurately processing information, the transmission of information data can be achieved through the network, but the regularity is relatively poor and the continuity is not strong. The initial computer technology could only realize the logical analysis and processing of data information, not correctly judge the authenticity of data information, in order to further improve the authenticity of data information processing, it is necessary to actively do a good job of information search and impose the intelligent development of computer network technology [6]. At present, the application speed of computer technology constantly accelerating, the difficulty of computer software development is also declining. Once the computer lacks fast response speed and observation ability, cyber crimes will occur and network security management cannot be achieved. Therefore, it is necessary to play the role of artificial intelligence technology from the point of view, coupled with a perfect management mechanism to further realize intelligence, and at the same time do a good job of data information collect and detect faults, analyze performance linearity and trends. If a computer fails during actual use, it can respond in a timely and effective manner to ensure the normal operation of the network system.

3.3 Key Technologies

3.3.1 "Living" identification technology

(1) Voice recognition technology

The so-called voice recognition technology refers to the identification and firm identification of the identified person by identifying the voices of different people. The main working principle of this technology is through the different characteristics of the tone, timbre and sound quality of different people's voices. The analysis of the identified person can realize the identification and confirmation of the identity of the identified person. Of course, in the process of applying this technology for identification, an important premise is that the relevant characteristics of the identified person are consistent with the system accumulation, so as to ensure the identification and successful identification.

(2) Fingerprint recognition technology

The so-called fingerprint recognition technology refers to the technology of identifying the identified person by scanning and collecting fingerprints of different human bodies. The main working principle of fingerprint recognition technology is to scan, collect, and identify accurately based on the uniqueness of each person's fingerprint. Therefore, the fingerprint recognition technology requires very high accuracy.

(3) Face recognition technology

The so-called face recognition technology refers to the technology that realizes the identification by scanning the facial features of the identified person [7]. In the specific application process of face recognition technology, it usually focuses on the pupil of the identified person. Or it can scan

the face structure, and at the same time, it can also zoom in on parts to achieve the collection of key features. Therefore, the firm results of face recognition technology are also more accurate.

3.3.2 "Inanimate" identification technology

(1) Smart card technology

The so-called smart card technology is to automatically identify the smart card, which means that its essence is smart card + computer technology. A smart card is an integrated circuit board that can independently complete storage and calculation tasks. By combining with computer technology, it can achieve data collection and management, storage, encryption, etc. Because the smart card technology has physical characteristics, it is widely used in the physical layer in the actual application process. For example, it is used for vehicle identification in the automotive manufacturing field.

(2) Barcode recognition technology

The barcode recognition technology includes one-dimensional barcode and two-dimensional barcode technology. The two-dimensional barcode is developed on the basis of the one-dimensional barcode. Comparatively, the two-dimensional barcode has a larger information capacity and Chinese and English character display functions. It is more powerful and performs better in error correction. Therefore, in the new era, two-dimensional barcodes have gradually become an important information identification and collection technology and are widely used at the same time.

(3) RFID technology

Radio frequency identification technology is also a non-contact automatic symbol recognition technology. The main working principle of this technology is to realize the technology of reading and identifying the corresponding target by using a wireless electromagnetic wave [8]. Specifically, radio signal transmits the data from the tag on the item through the electromagnetic field, and finally realizes the purpose of automatic identification and tracking.

4. Application of computer artificial intelligence recognition technology

4.1 Application Type

4.1.1 Robot

In the early 1970s, artificial intelligence robots have received widespread attention, and research and development have begun. Intelligent robot technology has been widely used in many enterprises, and it has shown a diversified development trend, which can be effective. Instead of people to complete some special tasks, such as operations in some high-temperature conditions or in harsh environments, intelligent robots can be used to achieve control to prevent bad damage to human bodies. Smart robots are not only widely used in the manufacturing industry, at the same time in the field of military resources survey in China.

It has also been widely used in the field of aerospace and medical treatment. In the development process of intelligent robots, artificial intelligence recognition technology has played a vital role in it. According to the current level of development of science and technology in China, artificial intelligence recognition technology has been used in robot manufacturing. The applications in the field are very extensive, but there are still some problems in the process of use that need to be improved, such as the low level of intelligent recognition of robots, the high cost of robotic research and investment, the lack of high-end robots, and the low-end excess of robots. The performance is relatively obvious. At the same time, in the use of computing robots, robots often have slow behavior judgments, lack of flexibility for some complex operations, etc. The main reason for the above problems is the lack of artificial intelligence recognition technology for the human body. A comprehensive perception, so in the research work of artificial intelligence robots, deeper research is needed through the movements and thinking modes of human limbs. Through the use of many different types of sensors, the perception sensitivity of intelligent robots can be improved, so as to continuously improve the robot's flexibility and environmental adaptability.

4.1.2 Artificial neural networks

The so-called artificial neural network refers to a parallel interconnected network system formed by a large number of simple processing units. This system can not only simulate the human brain system, but also has a variety of basic characteristics of the human brain [9]. The specific working principle is simulating the structure of the human brain's neural tissue, based on the inspiration obtained, the processing of a large number of units can be achieved as much as possible. In artificial neural networks, access to information and knowledge is mainly accomplished by means of distributed physical connections of network elements. At this stage, although the research and application of artificial neural networks are still inadequate, they can help people outside the boundary and make intelligent control.

4.1.3 Speech recognition

At present, robots to achieve normal communication with humans is an important vision for people and an important research direction for the development of artificial intelligence. Among them, the further development of speech recognition technology to achieve human-machine speech interaction is the key. At present, speech recognition technology based on the development of a series of products, and has been widely used, such as voice communication systems and voice-activated telephone interaction, etc. In the new era, embedded speech recognition technology has received widespread attention and has also developed rapidly. The number of companies involved in speech recognition technology is increasing, and the industry is also growing. Of course, how to combine chips with computer artificial intelligence recognition technology requires further research and development.

In the new era, computer artificial intelligence recognition technology has been rapidly developed and widely used, and has also achieved significant application results in some fields. However, due to the current research and development in this field, there are still many shortcomings, and the computer itself is not equivalent to humans. Therefore, in order to further promote the development of computer artificial intelligence recognition technology, it is necessary to carry out deeper research and exploration based on human subjective judgment consciousness. .

4.1.4 Image recognition

For the development of artificial intelligence recognition technology, the image recognition function has a relatively late development period compared to the voice recognition function, and it is also relatively difficult to apply, mainly because of the richness and universality of image recognition, which mainly includes various types of content such as image characters and transparencies. Among them, images are used as examples, and they are used in a wide range of fields, such as security, industry, agricultural production, and medical fields. Among the fields, license plate recognition system, electrocardiogram recognition technology used in the medical field, seed recognition technology used in the field of agricultural development, etc. In the security field, face recognition technology and fingerprint recognition technology can help public security personnel to break some routines. Cases that cannot be detected under the conditions of investigation. For the current level of technological development, image recognition technology is subject to obvious obstacles in the application process due to the diversity of image contrast and color, and technical staff need to improve the characteristics of the technology, and make reasonable choices according to functions, effectively improve the accuracy of image recognition, from a multi-dimensional perspective of the image slowly to reduce low-dimensional level, the realization of efficiency improvement of image recognition continues to promote the development towards a more intelligent direction.

4.1.5 Remote planning and control

Computer artificial intelligence recognition technology also plays a significant role in long-range planning and control. For example, the aerospace field uses this technology to manage and control the distance of the earth, so as to control the outer space spacecraft [10]. Another example is NASN

through computer artificial intelligence recognition technology to control and adjust spacecraft , and it is a milestone in the aerospace field and the first case in the world to apply computer artificial intelligence identification technology for remote monitoring. Fully integrate system control tasks and remote monitoring systems to determine the management direction. Autonomous planning is completed in practice, so that dynamic monitoring can be achieved and accurate data for remote control can be achieved. In addition, the staff can use computer artificial intelligence recognition technology to understand the operating status of equipment and identify problems within the program, and adjust it, analyze equipment detection goals, diagnostic goals, and recovery indicators to achieve the normal operation of the equipment.

4.2 Problems In The Application

4.2.1 Problems in speech recognition

Speech recognition technology is widely used in smartphones, and smartphones are also the earliest projects to use artificial intelligence recognition technology. The application of smartphone's artificial intelligence recognition technology requires the collection, storage and analysis of the voice of smartphone users. The collected voice data is calculated, after receiving the voice, the voice is compared with the stored voice data, and the qualified voice instructions are operated to realize the intelligent control of the voice. Nowadays in the field of very advanced smart phones, voice processing is more convenient, especially after the relevant voice database is established, the voice processing is faster and more accurate, and mobile phones can perform more operations through voice instructions. Although voice recognition technology has developed rapidly, the bottlenecks currently encountered is also insurmountable. First of all, China has a vast area and the use of dialects is very common, while artificial intelligence language recognition technology is currently limited to Mandarin, and the processing of dialects needs to be improved, and the technical hardware of speech recognition needs to be further developed and improved. In the voice control system, speech causes the work of the speech recognition system to deviate. Secondly, there are still some loopholes in speech recognition of the speech artificial intelligence recognition system, including the user's voice quality may change, when the user's voice quality changes, such as speaking because of sore throat. When the voice is changed, it will make it difficult for the speech artificial intelligence recognition system to recognize the user's voice quality and affect the use effect, causing users to fail to apply the speech artificial intelligence recognition system as expected. At the same time, the security of the speech recognition system is also an aspect that needs attention. The computer can already synthesize similar speech based on the recording, which poses a hidden danger to the security of speech recognition, making the safety of users' related equipment unsafe. Related researchers need to strengthen the security of speech recognition while enhancing the comfort of using it.

4.2.2 Problems in visual recognition

(1) Face recognition

Different individuals may have the same facial features. For people, it is easy to distinguish the two, but for artificial intelligence recognition systems, just identifying based on these facial features will inevitably confuse the same characteristics of individuals, making the identification results biased. At the same time, as the age increases, the facial features of people will change, and the faces of people will show different states under different expressions, and face recognition technology cannot predict the changes that the user's face will produce, and all expressions cannot be completely collected. All of these are difficult problems that cannot be overcome in current face recognition technology, and they are also the focus of future research on this technology.

(2) Fingerprint recognition

The increasing development of technology has created good living conditions for the counterfeiting industry. For example, everyone has different fingerprints. This is our unique feature and will not change for life. In this context, fingerprint recognition technology should be the most scientific and most rigorous artificial intelligence recognition technology. However, the fact is often

the opposite. Because people often contact different things, it is easy to leave fingerprints on many objects. With a little care, users' fingerprints can be collected and copied and forged. The fingerprint recognition technology cannot identify the fingerprints of these fake users, which easily causes great security risks and seriously damages the personal rights of users.

5. Conclusion

The research of artificial intelligence has always been at the forefront of computer technology research, and its research has a very significant impact on the development direction of computer technology, control science and technology. Artificial intelligence has a huge potential for development for many years, but this is just the beginning, and continued research will have major breakthroughs in many aspects. Artificial intelligence is an extension of the human brain and thinking. With the development of science and technology, artificial intelligence is constantly moving towards human intelligence, so we need to constantly face up to the relationship between artificial intelligence and human intelligence in the process of research.

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