

# *Research on the Application of Computer Artificial Intelligence Recognition Technology*

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**Abstract:** In recent years, with the rapid progress of science and technology, artificial intelligence has become a widely adopted new technology. It can not only effectively improve the accuracy of identity authentication, but also greatly reduce personnel attendance, thereby greatly improving social security and efficiency. Although computer artificial intelligence has brought tremendous changes to our daily lives, it also faces some challenges. Therefore, this article will delve into the core technologies in this field and their current applications.

## 1. Introduction

With the development of the times, computer artificial intelligence technology has played an important role. It not only makes the computing environment more convenient, but also can use advanced computer systems to imitate human thinking methods, complete various complex experimental tasks, and greatly improve the efficiency of information processing. Nowadays, artificial intelligence technology has become a new and intelligent modern electronic computer, which organically combines cutting-edge technologies from various disciplines and specialties to build a more powerful system [1]. One of the core technologies of artificial intelligence is computer artificial intelligence recognition, which can accurately detect erroneous behavior in the production process and model and reconstruct a large amount of data, making the abstract thinking models of the past more accurate. This technology has great potential for application in the domestic market.

## 2. Overview of Computer Artificial Intelligence Recognition Technology

In recent years, with the rapid development of computer artificial intelligence, they can use the intelligence of computers to simulate human judgment and achieve accurate and rapid identification of various information. For example, when a person sees an unfamiliar face, their brain immediately captures the features of the face, enabling them to accurately identify their identity. For this reason, computer artificial intelligence technology has emerged, which can scan human facial features and store them in a computer database. Once similar faces appear repeatedly, the computer can extract corresponding models from the database and combine multiple factors to accurately identify the person's true identity[2]. Artificial intelligence has become an important component of today's society, bringing great improvements to the operation, management, decision-making, and other aspects of

enterprises, greatly improving work efficiency and quality.

### **3. Overview Categories of Computer Artificial Intelligence Recognition Technology**

#### **3.1. Fingerprint recognition technology**

Through fingerprint detection technology, we can quickly and accurately identify everyone's personal information. This technology utilizes various fingerprint features, including endpoints, cracks, isolation points, circular points, etc. The changes in these features are stable, providing us with more accurate identity authentication services. It is both stable and unique, and easy to operate. Fingerprint recognition technology consists of multiple steps, including data collection, data processing, feature extraction, and comparison. These steps collaborate with each other to complete the task of fingerprint recognition. With the development of science and technology, fingerprint detection technology has been widely applied in various industries, including computer security, financial services, security prevention, intelligent door locks, etc.

#### **3.2. Speech recognition technology**

Through speech recognition technology, people's voices can be recognized based on their timbre and tone, and their true identity can be confirmed through the use of intelligent analysis tools. Through speech recognition technology, the features of human voice can be effectively removed. In addition, by analyzing human voice, a model that matches the system can be constructed to achieve effective comparison between users and the system. With the development of modern computer technology, the innovative application of speech recognition technology is of great significance for improving the efficiency and convenience of human-computer interaction.

#### **3.3. Face recognition technology**

With the development of technology, facial recognition technology has been widely applied in various fields. Its operating principle is to capture and process facial images using high-definition cameras, and then analyze and store them. The core components of this system include image acquisition, preprocessing, denoising, and collaborative processing. The steps of researching and developing facial recognition technology include: first, using data mining algorithms to deeply explore the features of facial images, and combining relevant parameters to construct a reliable model to detect different behaviors, dynamics, or backgrounds for effective comparison and identification. Face recognition technology is a high-tech technology that uses algorithms to recognize key features of the face. This technology has been widely applied in various fields.

#### **3.4. Barcode recognition technology**

This technology aims to provide recognition of one-dimensional barcodes and two-dimensional barcodes, where the information storage capacity of two-dimensional barcodes is significantly increased compared to one-dimensional clauses, and it also has stronger error correction capabilities. Due to its outstanding characteristics, this information recognition and collection technology has become increasingly valued and widely applied [3].

#### **3.5. Smart Card Recognition Technology**

By utilizing the powerful built-in automatic recognition function of smart cards, this technology can not only achieve various functions such as information collection, transmission, management,

encryption, etc., but also integrate it with computer systems, making it widely applied in the physical field and greatly improving work efficiency.

### **3.6. Radio Frequency Identification Technology**

By utilizing advanced radio wave technology, automatic detection and tracking of objects can be achieved. This technology converts radio signals into electromagnetic fields, thereby accurately locating the position, shape, size, and other features of objects. This technology not only effectively identifies items, but also can be widely applied to barcode technology, making item management more effective [4].

## **4. Specific Applications of Computer Artificial Intelligence Recognition Technology**

### **4.1. Application of QR code**

Currently, an important application of artificial intelligence is the recognition and use of QR codes. These QR codes have unique font shapes and are arranged according to certain rules, allowing users to easily view, record, and scan information from various ports. For example, by scanning health codes, people can more conveniently obtain their own health information, and the popularity of this technology has greatly improved people's quality of life and work efficiency. In addition, QR code technology also has various advantages and has been widely applied in various fields, making tremendous contributions to the development of society [5]. With the advancement of QR code technology, users can easily access social apps such as WeChat and QQ. This method is not only more convenient than traditional password verification, but also the scanning and login process is more secure and reliable. This new technology can effectively ensure user privacy and information security.

### **4.2. Application in Language Translation**

The use of computer artificial intelligence technology can significantly improve the efficiency and quality of language translation. This technology can not only effectively identify different languages and language types, but also effectively support translation, thereby enhancing the practical value of the language. By using common intelligent translation software such as Google Translate and Youdao Dictionary, users can easily convert multiple languages, whether they are Chinese or English.

### **4.3. Application of fingerprint recognition**

Fingerprint recognition technology is considered a very effective method, which can accurately identify a person's identity by analyzing the shape, color, size, and other relevant information of the fingerprint. Real time detection technology has been widely applied in daily life. For example, using fingerprint recognition technology for employee work management can help prevent personnel turnover. In addition to these, the use of fingerprint locks is equally important in the mobile phone industry: it not only provides higher security and convenience, but everyone's fingerprint information is unique [6]. Secondly, it is easy to operate and can be unlocked by simply pressing the button, effectively preventing theft caused by forgetting the password.

### **4.4. Application of Speech Recognition**

Due to the computer artificial intelligence recognition technology of speech recognition system, its core components include: input end, recognition end, transmission end, recognizer, control end, storage end, and display end, which together provide a reliable foundation for achieving speech

recognition. The core of speech recognition technology lies in real-time communication with humans through simple language, thereby promoting the application of machines in daily life and promoting human innovation and development[7]. For example, using speech recognition technology, people can save the tedious operations on the keyboard and input text quickly and accurately. This not only greatly improves writing efficiency, but also effectively reduces labor intensity and frees people from tedious typing work. With the rapid development of technology, artificial intelligence recognition technology is also constantly improving. These technologies can help us reduce errors in the speech recognition process, thereby promoting high-quality development of human society. In addition, speech recognition can enhance communication between humans and machines, enhance people's understanding of machines, and contribute to the healthy development of machine networks. With the continuous development of speech recognition technology, it has been successfully applied to various intelligent devices, from toys to controllers to keyboards, bringing great convenience to people's daily life and travel. It not only alleviates work pressure, but also makes people's lives more comfortable and safe.

#### **4.5. Application of Face Recognition**

In recent years, the popularization of computer artificial recognition technology has made its application in the field of visual facial recognition more widespread. In the past, consumers could only purchase by relying on Alipay, WeChat and other intelligent means. The emergence of these payment methods made it easier for consumers to complete the payment of various goods. However, due to the decreasing battery capacity of smartphones, it is easy for people to encounter payment difficulties when they are in standby mode [8]. However, the development of facial recognition technology has brought significant changes to this issue, as consumers can make payments directly through their faces and no longer rely on any other means. The use of facial payment technology can significantly improve consumers' shopping experience and has been widely used in various shopping malls. For example, Alipay's face recognition function has become a common intelligent device. With the development of Alipay, there are more and more funds in it, and if the password setting is too cumbersome, the security will be threatened. Therefore, using facial recognition technology for login is an effective method, which not only solves security issues, but also can be widely applied in access control systems. For example, in order to better manage the access control system, hospitals can use facial recognition technology to scan the facial information of patients and nurses. In this way, only when this information matches the information in the database can they enter the hospital smoothly. In this way, there is no need to spend a lot of manpower on inspections and inquiries, thereby improving the hospital's management level and patient satisfaction [9].

#### **5. Conclusion**

In summary, computer artificial intelligence recognition technology has been widely applied in various fields due to its excellent performance, thereby significantly improving people's life and work efficiency. With the rapid development of science and technology, artificial intelligence recognition technology has also undergone tremendous changes. Various types of applications such as speech recognition, facial recognition, and fingerprint recognition not only have their own advantages, but also have huge development space. China's research and practice in the field of artificial intelligence has significantly surpassed that of developed Western countries and achieved astonishing results. Therefore, we have a responsibility to actively promote the progress of artificial intelligence recognition technology, strengthen its practical application, expand its coverage, and promote sustainable development of society.

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