

Automatic Identification Technology in Internet of Things Engineering

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Abstract

Internet of things information technology is not only a part of the important structure of modern science and technology and information electronic technology in our country in the new period, but also an important driving force for the development of "information technology" in the new era. One of the key technologies in the field of Internet of things application is automatic identification. Automatic identification technology refers to the application of certain technology identification equipment, through the close activities between the identified items and the identification device, automatic identification to obtain all the data information of the related items, And provides to the background computer processing system to complete the related follow-up processing a technology. This paper first introduces the related concepts of automatic recognition technology, and introduces the classification of automatic recognition technology and the application status and future application prospect of automatic recognition technology in the Internet of things.

Keywords

Internet of things; Automatic Identification Technology; Applied Research.

1. Introduction

A series of emerging markets in the late 20th century, after a severe blow to the financial crisis, gave birth to the mobile Internet, a new industry. Ten years later, the subprime mortgage crisis caused by the United States was out of hand, the outbreak of the financial crisis had not yet completely subsided, and a new round of technological revolution had begun. Internet of things technology will also help people to set up new ideas, promote the improvement of new production supply chain and people's demand for consumption. It is of great significance for us to speed up the recovery of the world economy and redistribute all kinds of benefits. First, the concept of the Internet of things was first proposed by MIT Auto-ID Laboratory in 1999. They define the concept of the Internet of things as: the Internet of things is to connect all items together through information sensing devices such as RFID and bar codes to realize the intelligent identification and management of objects. Its essence is to combine RFID technology with Internet technology and apply it. The Internet of things is a kind of information exchange and communication between people, things, people and nature. It will provide us with a new experience of life and consumption, widely used in business, transportation, logistics, medical care and other important aspects and its economic potential is unlimited.

In the whole computer information processing system, the data collection and analysis is the important foundation of the whole information system, these large amounts of data through the comprehensive analysis and filtering of the data system, finally formed the information that affects our decision-making. In the perception layer of the Internet of things, one of the most important functions is the perception and identification of objects, because sensors can only

directly perceive signals and can not identify objects. In order to realize the storage and acquisition of special objects, it is necessary to identify and authenticate the information.

Automatic recognition system is a technical system based on information processing technology. It is a system of sensor technology, computer technology, communication technology and so on. Its input terminal represents the recognized information, and the output terminal represents the recognized information. Information processing in automatic recognition system refers to the transformation and processing of information in order to achieve the purpose of rapid application.

2. Automatic Identification Technology Classification

2.1. Bar Code Technology

"Bar code technology is an automatic recognition technology which integrates bar code theory, photoelectric technology, computer technology, communication technology and bar code printing technology. "[1] It is undoubtedly the earliest automatic recognition technology widely used at present. Bar code has a history of more than 60 years. By 1970s, bar code has been applied and developed in practice. The bar code can be divided into UPC code, EAN code, cross 25 code, 39 code, Code 128 code, 93 code, 49 code. According to the different dimensions of bar code, bar code can also be divided into one-dimensional bar code and two-dimensional square bar code.

"The principle of bar code recognition is to convert bar codes compiled according to certain rules into meaningful information, It takes two processes: scanning and decoding. "[2]

With the rapid development of social market economy in China, bar code technology has gradually developed and become a common automatic identification technology for data acquisition and information analysis. Because they have many advantages, such as fast speed, high accuracy, low cost, cheap and economical, flexible and practical, large degree of freedom, simple equipment, easy processing and production, etc. Widely used in commodity circulation, industrial production, book collection management, information technology services and other fields.

2.2. RFID Technology

"RFID can identify specific targets and obtain relevant data through radio signals. That is, there is no need to establish mechanical or optical contact between the identification system and a specific target, Radio frequency signal is used to transmit wireless contact information through spatial coupling, and the technology of identification is achieved through the transmitted information. It is a non-contact automatic recognition technology without human intervention. It is an advanced form of automatic recognition technology. "[3] Generally speaking, RFID system consists of radio frequency tag, reader, data exchange and management. There are two kinds of coupling modes in RFID technology from the point of view of information transmission, transformer coupling model is used in RFID low frequency band, and spatial coupling model of radar detection target is used in RFID technology at high frequency. RFID main core technical component is electronic label, which can read the information stored in the electronic tags and identify the objects represented by the electronic tags. The identity of people and appliances.

With the continuous development of the market, RFID labels develop to diversified, multi-functional, multi-style, low cost, high memory, high security, and so on, forming a new Internet of things application.

2.3. Close-range Wireless Communication Technology (NFC Technology)

Close distance wireless communication application technology is NFC technology, which is a short distance high frequency wireless communication technology. Of the two devices that use

NFC technology to communicate, one must act as a NFC reader and the other as a NFC label. NFC technology provides customers with a simple, touch-based solution. It can effectively help Chinese consumers to exchange personal information, access content and enjoy services at any time, and has natural information security. In mobile phone payment and other fields have a huge development prospects.

2.4. Biometrics Technology

2.4.1. Iris Recognition Technology

"The iris of the human eye is made up of fairly complex fibrous tissue whose detailed structure is determined by random combinations before birth." [4] Iris recognition technology is a kind of biometric technology based on computer recognition of the external features visible on iris under natural or infrared light. Iris recognition technology has the advantages of, reliable, no physical contact and other advantages. But it is also difficult to miniaturize the size of the image acquisition device, and the lens may produce image distortion.

2.4.2. Retina Recognition Technology

Retinal scanning is one of the oldest biometric techniques. Retinal recognition requires laser irradiation of the back of the eyeball to obtain retinal features. Compared with iris recognition, retinal scanning is perhaps the most accurate and reliable biological technique. It is also the most difficult technique to accept because it feels highly involved in the body. Retinal technology has many important advantages, such as no wear, no aging, no direct interference from ordinary eye diseases, and no direct contact between users and electronic equipment. "And because the retina is invisible and will not be forged, it is the most difficult system to be deceived." [5]

2.4.3. Facial Recognition Technology

Facial recognition technology is realized by detecting the correlation between facial features and them. At present, the two technologies mainly used to observe and capture face images are standard video and thermal imaging.

2.4.4. Fingerprint Identification Technology

"Because everyone's fingerprint lines vary from pattern to breakpoint and intersection, are unique and remain unchanged." [6] Depending on the uniqueness and stability of the species, we can completely correspond to any person's fingerprint, compare his fingerprint with the pre-reserved fingerprint information, and verify his true identity. This is fingerprint identification technology.

Compared with other biometric techniques, fingerprint automatic identification is a more ideal identification technique.

2.4.5. Sound Recognition Technology

Sound recognition is a behavior recognition technique. The sound recognition system can directly realize the "no hand" information and data acquisition through the sound signal instruction. One of its biggest characteristics is that it does not use hands and eyes. This is especially suitable for workplaces where information and data need to be collected and hands and feet used at the same time.

2.5. Identification Techniques For Magnetic Strips And IC Cards

The magnetic stripe technique applies the fundamental principles of physics and magnetism. The advantage of magnetic strip technology is that data can be read and written, that is, it has the ability to rewrite data on the spot. Data storage can meet most needs, easy to use, low cost, certain data security and it adheres to many different specifications and forms of substrate.

IC card is to put the programmable IC chip in the card, so that the card has more functions. IC card can be also divided into contact IC card and non-contact IC card according to reading and writing mode. IC card can be divided into memory card, logic encryption card, CPU card and super smart card according to the IC chip. Compared with other kinds of cards, IC card has the characteristics of large storage capacity, small volume, light weight, strong anti-interference ability, easy to carry, easy to use, high security and low network requirements.

3. Conclusion

Internet of things is to build a network information system covering all people and things in the world by using new technologies such as RFID, sensors and wireless sensor networks under the premise of modern Internet technology. Thus promoting human activities can run in an intelligent Internet of things facility. Compared with other traditional Internet, the Internet of things has all-round perception, reliable transmission, intelligent processing and other functions. The Internet of things is neither a prediction of a better future, nor a frenzy of technology, but another great industrial revolution that will change the world. The Internet of things is neither a prediction of a better future, nor a frenzy of technology, but another great industrial revolution that will change the world.

Automation recognition technology combines the physical world with the information world, which is the most unique part of the difference between the Internet of things and other networks. Automatic identification technology can accurately identify and identify each item, and can update a large amount of data in real time. It is an important factor and cornerstone for building the real-time sharing of information of all items in the world. Automatic recognition technology is mainly based on the progress of modern computer and wireless communication technology. It mainly refers to the automatic understanding of information data and the important technology of automatic output to computer. The wide application of automatic identification technology will make it an important part and component of modern information industry in China, and has a very broad development prospect.

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