Design of Internet of Things Information Interactive Perception System Based on 5G Mobile Communication Technology

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Abstract: In recent years, with the continuous reform and progress of Internet technology and computer technology, mobile communication technology also has a cross era development. Now, human society is stepping into the 5g mobile information age, and the Internet of things is also born. The Internet of things mainly deals with the communication and connection between things, mainly using 5g mobile communication technology, which is conducive to solving the problem of things The barrier between communication and connection is also the direction often discussed in many fields of modern society. This paper mainly introduces the network characteristics of 5g technology, and then analyzes the role of 5g technology in the development of the Internet of things, hoping to help people from the Internet of things industry.

1. Introduction

5g mobile network is also called the 5th generation mobile Internet. It is mainly built on the basis of the original 4G. The data transmission speed of 5g network is about 100 times higher than that of 4G network, which can show that users can download a file with a large amount of information in a few seconds. So when the concept of 5g mobile communication technology was born, it was widely concerned by the society. It has 1g file receiving speed per second, which greatly facilitates the work and life of users[1]. According to the data reflected by relevant operators, 5g mobile communication technology will be fully promoted and serve the public in 2020. In addition, compared with the previous mobile network communication technology, 5g mobile communication technology has a higher spectrum efficiency, a wider range of use, fewer areas will be limited, and can bring users a new and high-definition video viewing experience. 5g mobile communication technology has a fast network speed, which can receive instructions in time and transmit them to self driving vehicles. Such a fast response speed and transmission speed will effectively alleviate traffic congestion, promote communication and exchange between different vehicles, and keep a good distance within a reasonable range at all times[2]. The use of 5g mobile communication technology in medicine can help doctors to operate, and so on. So 5g mobile communication technology has the characteristics of wide field and high level, which can better promote the development of information age and Internet of things era.

2. Advantages of 5g Mobile Communication Technology

2.1. Good Energy Saving Effect

5g mobile communication technology has a strong compatibility and flexibility[3]. In general, 5g communication network does not need to consume too much energy, so it has a strong energy-saving effect, and this feature is consistent with the concept of sustainable development in China, so the technology has a better development prospect.

2.2. High Efficiency

5G mobile communication technology takes user experience as the main foothold, its acceptance frequency is much higher than 4G network, and 5g network has strong penetration ability, it can

deal with external environment factors freely[4]. Therefore, 5g mobile communication technology has a wide coverage, and presents an interactive mode, which greatly enhances the efficiency of the company's use of the network, so as to better promote the development of the animal network, also expand the company's business, and change the way of operation and so on.

2.3. Improved Scalability

5g mobile communication technology effectively combines the previous mobile communication technology, bringing users a new experience and use function[5]. According to relevant data, 5g mobile communication technology has more than ten times the coverage of 4G network technology, and has further strengthened the reception and release of signals, thus facilitating more users, so 5g mobile communication technology has greatly improved the scalability. With the support of 5g network, social network will make human civilization in the future the development is more rapid.
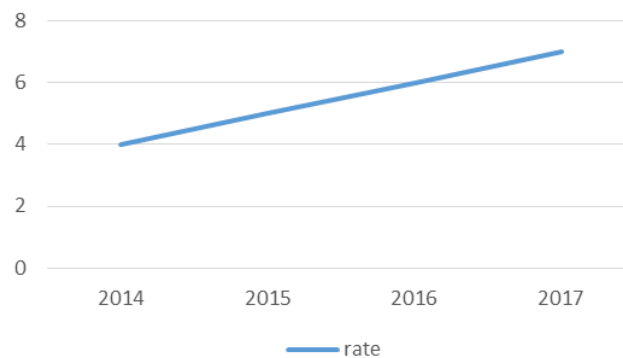

Figure 1 Information conversation recognition rate

2.4. Enhanced Reliability

The reliability of 5g mobile communication technology has been further enhanced to better meet the needs of different users[6]. On this basis, 5g mobile communication technology can alleviate the user's network delay phenomenon and improve the user's use experience[7]. Compared with the previous network technology, 5g mobile communication technology has larger capacity and real-time network transmission.

3. Progress of Internet of Things Under 5g Mobile Communication Technology

3.1. Increased Network Scope

5g mobile communication technology can better use antenna and high frequency band to complete data transportation, or adopt direct communication technology[8]. Before strengthening cellular data mode, the communication mode between each terminal can be established, which can further improve the frequency band and network coverage, so as to promote the development of the Internet of things era.

3.2. Cultivate New Thinking

Under the application of 5g mobile communication technology, the continuous development and improvement of artificial intelligence has been derived, and the intelligent navigation driving has also been promoted. In addition, 5g mobile technology also promotes the emergence of Internet of things technology innovation thinking, which plays an important role in the development and innovation of Internet of things[9]. We should continue to use new technologies, and effectively play its internal role to better serve the Internet of things era.

3.3. Transformation and Implementation of Traditional Network

After 5g mobile network mode, the data transmission speed of 5g mobile communication is about 100 times of the previous network technology, which also promotes the quality and speed of

information transmission of mobile terminals such as mobile phones and tablets[10]. At this time, the control signals under 5g mobile communication technology have become more diversified, and also accelerate the development of information technology such as cloud computing and big data, so as to create favorable conditions for the Internet of things era.

4. Future Automation

Although the labor and capital were replaced by CIM, the attempt to implement "unmanned factory" ended in failure. However, the specific elements of CIM philosophy are solidified in practical activities. In the context of big data expanding, the cognition of Internet and data is not only professional ability, but also social ability and interdisciplinary ability. In short, for the common development of production technology, automation technology and software, more work will be completed in the context of technology, organization, socialization and wide flexibility. Industry 4.0 means new logic and quality for smart factory production. The Self-discipline Function of intelligent system product production is the communication of machinery, labor and other system components and communication control technology, the non-human factors and tasks of independent production, and the control of production process.

5. Big Data Research

5.1. What is Big Data

With the development of society and science and technology, data is no longer regarded as a "by-product" of social production, but a raw material that can be processed twice or many times. From now on, we can explore more value. Moreover, its essential value is often taken off and becomes an important asset. With the development of the third industrial revolution, the ability of human beings to process and accumulate data has made a certain leap, but the speed of data generation can not bear it. For example, the nature of big data, from the perspective of industry 4.0, big data is no longer "hardware generated" data, but can be used as "live and flexible" data. By analyzing these data, people can see the nature of things and provide a new way for people to understand and transform the world.

5.2. Big Data Research

Big data integration (big data equipment) is a software and hardware product specially used for large-scale data analysis and design. It consists of server, storage device, operating system, database management system and some special data. This is for query, processing, and analysis purposes. This is to solve the problem of big data infrastructure data processing and integration, and integrate product data analysis. Big data processing uses different data processing architectures to integrate distributed system architecture, hardware and software into one system to support different industry applications. Through all distributed data processing systems and optimized hardware and software structures, the customer data business platform continues to grow. The vertical hardware can be expanded, and the horizontal linear expansion of nodes can also be increased.

6. Internet of Things and Information

Internet is an information interactive industry, which covers data security, data acquisition, remote data connection and other knowledge, and uses advanced industrial technology to integrate with each other. Through the Internet of things, data remote service, diagnosis system monitoring, fault data collection and system user rights management can be carried out. Through the application program and rich technical knowledge, the staff analyzes the equipment information fed back to customers to achieve rapid information feedback and troubleshooting.

6.1. Remote Operation

Figure 3 shows the Internet remote service network topology of object information interaction. It

can be seen from the topological diagram that the industrial production line equipment sends the equipment information status data to the local data analysis node through the industrial Internet of wireless communication technology. Local analysis node analyzes information status data and forwards it to cloud storage. Machine maintenance personnel can use computers to read information data and analyze the status of the machine.

6.2. Monitoring Function

When the system state changes, the big data of the network system is transmitted to the diagnosis system. The diagnosis system displays the change information in the GUI interface and stores it in the database. At the same time, send email to the designated person, process diagnostic information and change information. When the system changes information, the diagnostic system diagnoses the change information of the system. System IOT and remote diagnosis system can monitor production line information of multiple plant systems. The system diagnosis system monitors all systems in the system production line with multiple complete sets of equipment. Realization goal: users can select system production line of specific factory through GUI interface. Users can select the system on the production line through GUI interface.

6.3. Collection of Fault Data

In case of system failure, collect the bus data after failure and monitor the system status in real time. Stop collecting data when the alarm status is reported to the system. Store the data collected in real time in the database. The database can hold data for up to 15 minutes. In the engineering workshop, the fault collection interface of the robot is carried out. The interface provides the function of querying and checking out bus data according to conditions. Support the operation of various states & functions. For example, search for both time conditions and error code conditions. The field personnel connect the analyzer to the fault system, turn on the system switch, and data collection begins. When the system switch is off, data collection is interrupted. After the system diagnosis system receives the error information reported by the virtual physical system, it displays the error information in the GUI interface and stores it in the database. When a system error occurs, the system diagnostic system can describe the content of the error and send an email to the designated person to solve the problem in time.

7. Conclusion

At present, 5g mobile communication technology has become mature and perfect, but with the continuous progress of society, the development level of Internet is higher. The Internet of things will appear in various and flexible forms in the future. And make people's life and work more convenient. However, the development of the Internet of things is inseparable from the development of 5g mobile network communication technology.

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