

# Preliminary Study on the Practical Application of Big Data Technology in 5G Communication Network

Weiting Zhang

Inner Mongolia Agricultural University, Hohhot 010020, Inner Mongolia, China.

**Abstract:** Today's Internet commerce pays attention to the accurate positioning of users and the targeted delivery of products, and its realization is fundamentally based on the support of big data. However, the work of big data computing is a very complex process, not only to consider the accuracy of data computing, but also to comply with the corresponding "network security law" regulations. This paper briefly describes the application of big data technology in business service and production process in 5G communication network, which further leads to deeper cognition and thinking of related technologies.

**Keywords:** 5G Communication Network; Big Data Technology; Practical Application

Everyone's daily life will produce a lot of data, and network technology companies pay more and more attention to this kind of data. In our daily life, we can use common technology companies to collect users' data, similar to bike sharing, which collects users' daily riding data. Through the corresponding big data computing technology, combined with users' living habits and daily haunting points, we can draw users' figures, so as to deliver services. There are so many similar cases, the core of which is to collect data, analyze data, and push customers to create benefits. In the 5G era, facing a large number of users, it is a systematic task to calculate and process the output data, which covers a wide range, and specific problems need collective analysis.

## 1. Current situation and advantages of 5G communication network

### 1.1 Development status of 5G communication

Under the background of vigorously promoting 5G communication network in various countries, the infrastructure construction related to 5G communication networks will be more comprehensively implemented, and the corresponding supporting facilities will be gradually improved. At present, the bottleneck of 5G communication network is that 5G signal band, as a kind of millimeter wave, has a short transmission distance. In order to ensure its transmission efficiency, a large number of corresponding base stations need to be set up. However, due to the intensive construction of base stations, the signal interference is particularly serious. In order to ensure the quality of 5G communication and the stability of network use, it is necessary to further optimize the relevant base stations construction.

### 1.2 Advantages of 5G network

The transformation of each generation of communication network is accompanied by the birth of new business models, such as the impact of e-commerce born in 2G and 3G era on traditional stores, and the reorganization of We-media born in 4G era on traditional leisure entertainment industry. Today's 5G era will also have a huge impact on the traditional basic

business model, in which the Internet of things industry will develop rapidly. Compared with 4G network, 5G networks has great advantages in transmission bandwidth, and can reduce the delay of data transmission and improve the quality of data transmission. 5G network communication stresses fast response, which greatly promotes the development of all walks of life in the development of intelligent city. For example, in the development of industry 4.0, the manufacturing industry needs rapid information feedback for production automation equipment, and the data link field has precise control over unmanned equipment.

## **2. Concept and development of big data technology**

### **2.1 The concept of big data technology**

In the era of big data, the amount of data processing is quite large. Due to the addition of many networked intelligent devices, in the normal use process, the data generated by them will grow exponentially with the innovation of network communication. Nowadays, the storage of data has been upgraded to TB units. The sources of big data mainly include RFID data, sensor data and data of human interaction on social networks. It can be said that the data sources are more extensive, so the analysis of the corresponding data needs to be specific. According to the data type, we can divide the data into structured, semi-structured and unstructured. Because there are many data types, there are new requirements for data storage, which can virtually improve the load of the server and the growth of the related application and maintenance costs.

### **2.2 The development of big data technology**

The development process of big data technology can be regarded as the development process of database, which can be divided into manual management stage, file system stage, database stage and big data stage. In the manual management stage, the data is mainly processed by hand. At this stage, the computer has not played its due role in the corresponding fields, which seriously affects the efficiency of the computer. In the file system stage, because the files are independent of each other, it is impossible to achieve the mutual delivery of files and the corresponding data sharing, so it is difficult to deal with the data. In the database stage, the rudiment of database technology is formed, which ensures the integrity of data. There is logical independence between databases, so data can be extracted and applied quickly. In the stage of big data, it has completely separated from the scope of traditional database, and introduced different processing means and methods for different data.

## **3. Practical application of big data technology in 5G communication network**

### **3.1 Data collection and screening**

Because 5G communication network produces a large amount of data, in order to integrate, analyze and store such a large amount of data, first of all, we need to collect and filter the data, including the intelligent perception level and the basic support level. In the intelligent sensing layer, there are all kinds of sensors, network communication chain, and intelligent recognition. In short, the Internet of things technology provides the leading conditions for data collection. For the basic support level, it mainly includes the Internet of things and the corresponding cloud storage equipment, which provides basic facilities for the storage and application of big data in the future. After the implementation of the corresponding data collection, it is necessary to preliminarily screen the data. The purpose is to classify and simplify the complex and diverse data, eliminate the wrong data, and provide accurate data sources for subsequent data analysis.

For example, driverless technology is based on big data technology and artificial intelligence technology. Driverless technology needs to quickly judge the sudden traffic situation, so as to achieve the corresponding operation requirements, and achieve the purpose of driverless. Its basic operation process is to collect all kinds of environmental data through the sensors installed on the device, which are similar to optical detectors, distance detectors and high-definition cameras, and transmit the data to the cloud for screening through 5G network. Finally, the calculated results are fed back to the intelligent device terminal through 5G network, so as to guide the operation of the device. This process requires big data technology to screen, integrate and analyze the information collected by terminal devices, and the corresponding data is dynamic data. Through the analysis of the corresponding process, it can be found that the data acquisition, data analysis, data operation, and finally data feedback of driverless technology need to be completed in a short time, and for the rapidly changing real-time environment, the speed of network transmission is more tested. 5G communication network with its own advantages of high speed and low delay plays a

key role in data transmission in the field of unmanned driving.

### **3.2 Data analysis technology**

The production of data has diversity, and how to use it in the diversity of data. To find the target data, it is necessary to analyze and mine the data carefully. The traditional data analysis is gradually transformed from the initial manual analysis to intelligent analysis. Through the construction of the corresponding algorithm, the relevant analysis logic is defined to quantify the data. The common data analysis is fuzzy analysis, which is subject to the authenticity and reliability of the data. Most of the results are obtained by data analysis as a fuzzy concept.

For example, through 5G network feedback users in network platform a series of network behavior, the platform can filter and analyze the corresponding data of such behavior, and get a user behavior consumption portrait, in order to push accurate services and products in the future business activities for users.

### **3.3 Visualization technology**

After the completion of data screening and analysis, we need to quantify the data. The final key values of the data are displayed through charts or even models, so that the corresponding service personnel can more intuitively understand the behavior preferences of the user group. In the 5G era today, all kinds of data are transmitted rapidly and rapidly. The improvement of visualization technology can guide the corresponding decision-makers to make correct judgments on the whole market and make timely strategic adjustments.

## **4. Conclusion**

The application of big data technology in 5G communication network can be said to penetrate into all aspects of people's life. Big data technology is the basic technical support tailored for 5G network. While 5G network optimizes people's life quality and improves production efficiency, big data technology also provides corresponding service technical support. For the future of big data technology, with the continuous improvement of people's service requirements, the development track of big data technology will follow the track of data diversity research and specific analysis. With the gradual improvement of the construction of 5G base stations, more users will join the 5G network in the future. At that time, big data technology will have great challenges, no matter the carrying capacity of its hardware devices or the advanced nature of software.

## **References**

---

1. Hong F. Research on the practical application of big data technology in 5G communication network. *Big Technology* 2020; 000(007): 214-215.
2. Yao Y, Zhang Z. Application of big data technology in 5G communication network. *Equipment Maintenance Technology* 2020; 176(02): 71.
3. Hou P. Effective application of big data technology in mobile communication network optimization. *Computer Knowledge and Technology* 2020; 16(02):9-10.
4. Zhen Z. Application of big data analysis in mobile communication network optimization. *Engineering Construction and Design* 2017; (1): 173-174+177.