

The Development And Application Of Wireless Communication Technology

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Abstract: Nowadays, the development of wireless communication technology is changing rapidly and plays an important role in many fields. Therefore, it is necessary to know its development and application. This paper analyzes the current development and future trend of wireless communication technology, and enumerates the application examples of wireless communication technology in agriculture, industry, military and other fields, hoping to provide some references for readers.

0 Preface

Communication is the exchange of information, which has existed since ancient times. Modern wireless communication technology is a new type of communication way to exchange information through electromagnetic wave signals, which has the advantages of stable signal and fast speed. The two main ways of modern wireless communication technology are microwave communication and satellite communication. Microwave communication is suitable for large capacity information transmission, while satellite communication is suitable for long distance communication [1]. At present, communication industry is one of the fastest growing industries in the world[2], and wireless communication technology is getting more and more popular in many fields. Therefore, it is of great importance to analyze and explore the development and application of wireless communication technology.

1 Development status of wireless communication technology

1.1 Mobile communication technology

Nowadays, 4G technology is widely applied in wireless communication technology. It has great advantages in information transmission speed and application speed. As far as the speed of information access is concerned, it is up to two thousand times as much as it is on the basis of the original. At present, 5G mobile communication technology is also beginning to see. The US Qualcomm Corp has demonstrated the technology prototype of 5G at the third world Internet Conference. The first version of 5GNR is also released at the end of 2017. I believe that 5 G technology and related applications will also emerge in large numbers.

1.2 Development of Bluetooth Technology

With the development of wireless communication technology in long-distance information transmission, the development of wireless communication technology has made full progress in the short distance information transmission. The most typical example is Bluetooth technology. Faced with the dilemma that traditional transmission methods can not meet people's needs, the emergence and use of Bluetooth technology help people solve the problem of signal and transmission speed. Bluetooth technology enables all kinds of signals to be transported through access points, and relies on wireless data technology and voice technology to replace traditional cables, which can effectively reduce costs and achieve efficient transmission. At present, Bluetooth technology has been widely applied in many fields, such as Internet, home remote control equipment, digital camera, image transmission, home appliance network and so on, and has achieved good application results.

1.3 wireless broadband technology

At the present stage, the application of wireless broadband access mainly includes four ways: microwave broadband access, satellite access, multi-point microwave access and infrared optical communication. Ultra wide band wireless access technology (UWB), as one of the ten major technologies of future communications, has also made full progress. Its transmission mode has changed from traditional carrier transmission to ultra short term pulse transmission, and the speed of transmission has been greatly accelerated. Compared with the traditional access method, broadband wireless access technology has the advantages of low operation cost, high transmission speed, strong anti-interference, high bandwidth and high security, but in the actual development there are still many problems in the process, such as the access mode has some defects [3].

2 Development trend of wireless communication technology

2.1 Continuous integration of Technology

In the future, communication technology has a trend of continuous integration with other technologies, which is mainly embodied in three aspects. The first is the combination of wireless communication technology and cellular technology. Short distance transmission of wireless communication technology is widely used in electronic products and gradually presents a variety of development trend. The second is the combination of wireless broadband technology. This is the inevitable trend and the main trend of the future wireless communication technology development. The combination of them can not only improve the detection of network environment, but also alleviate the interference between different users. The third is combined with modern multimedia technology, the wireless communication users has higher requirements on the transmission of video and audio information, so the wireless communication technology must be integrated in multimedia technology to apply to the market demand, it is also a direction for future development of wireless communication technology.

2.2 Application fields are widening

In the future, wireless communication technology will be shown in more applications. In order to ensure the efficient application of wireless communication technology in various industries and constantly meet all kinds of new requirements brought by rapid development, it is necessary for researchers to increase research efforts and further explore the connection between wireless communication technology and other industries. Thus, the wireless communication technology is better, faster and more effective to be applied to many fields, and it can make it mature and perfect day by day.

2.3 Personalization is becoming more and more prominent

With the popularity and application of intelligent mobile communication devices, the individual characteristics of information become more and more obvious, and the individual demand is increasing. Only the very personalized wireless communication service can satisfy the modern people's super high communication demand. Therefore, one of the most important direction of future wireless communication technology is to develop the individualized characteristics of the society. In this case, the development of wireless communication technology in the future should understand the market demand and take this as the guidance, and constantly improve the development of personalized innovation. On the basis of fully understanding the user's personalized needs, technology and application should be updated in time so as to constantly adapt to the new needs of the market and users[4].

3 Application of wireless communication technology

3.1 Application of wireless communication technology in agriculture

Today, agricultural production has also entered the era of information. Wireless communication technology has been widely applied in agricultural production due to its fast transmission, simple networking and rapid technology development. At present, the wireless communication technology has already had a lot of practical experience and application examples in agriculture and has achieved good application effect. For example, GSM technology is used to realize remote monitoring of agricultural production, and it can collect and analyze various data in the process of crop growth in real time. The analysis and determination of soil information can be achieved by using GPS technology, which can be used to select suitable crops for planting. The application of GPRS technology to the detection of farmland environment can prevent and control the insect pests in time. All of these systems, to a certain extent, are free from the dependence on natural environment in agricultural production process, and improve or create a powerful environment for production in a certain range, which is very significant for agricultural production[5]. There are also diagnostic systems developed in combination with wireless communication technology and image processing technology. The agricultural producers can send information and images to the expert system, and the expert system can give some guidance to the agricultural producers through the analysis of the diagnosis. In this way, agricultural producers can make more scientific agricultural production,

which can reduce the cost and improve the quality of the crop [6].

3.2 Application of wireless communication technology in industry

Compared with wired communication technology, wireless communication technology has the advantages of expansibility, simple maintenance, low cost and flexible networking. Therefore, with the rapid development of industrial automation, there is a trend of gradually replacing wire communication technology. At present, in some cases, such as mobile rotating objects, in some special industries, or when the wiring distance is very long and the scope is very large, the application of wireless communication technology can bring huge economic benefits [7]. In short, wireless communication technology is applied more and more in the field of industrial automation, and its importance is self-evident. Therefore, it is necessary to strengthen the research of wireless communication technology, so as to promote the development of industrial automation.

3.3 Application of wireless communication technology in military aspects

Compared with the past, in the modern war, the deployment of the army is more ingenious and flexible, and the battlefield is changing rapidly. Whether we can get battlefield information in time and accurately will have a great impact on the war situation. Therefore, advanced communication technology is particularly important, and the rapid development of wireless communication technology has been in a very important position in the military. At present, modern wireless communication technology has many important applications in military communication. For example, NTDR network technology, which realizes multi hop communication between groups and has automatic repair function [8]. DBF Technology (digital beam) has been widely applied in radar field. The technology can preserve well the echo information on the antenna aperture and combine with the flexible digital processing, which has great advantages and flexibility compared with the simulated beam wave [9]. In addition, the application of PIX communication network in military communication can effectively improve the secret and security of military communication. The application of wireless communication technology in the military field is conducive to improving the digital level of the army, thus improving the overall operational level of the army. In the future, we should constantly study and learn more advanced wireless communication technologies to enhance the level of military communications and move towards a faster, more stable and safer target.

4 Conclusions

To sum up, in recent years, the modern wireless communication technology develops rapidly and plays an indispensable role in most areas, which greatly facilitate people's production and life. But in the future, wireless communication technology is also facing more and more stringent requirements. This requires the industry and related people to constantly explore and innovate, so as to promote the continuous improvement of wireless communication technology to better serve people.

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