

## The application of IoT and agricultural irrigation and its significance

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### Abstract

As a large agricultural country, agriculture has always been the basic pillar supporting the construction of national economy. In order to improve the production efficiency of agriculture and the utilization of water resources, with the development of science and technology, the access of information technology has become widely used in agricultural development production lines. Sharp blade. Firstly, this paper introduces the development situation and status of the Internet of Things in China, highlights the superiority of the Internet of Things in the new era background, and clarifies the current stage of agricultural irrigation based on the current situation and needs of the domestic domestic irrigation field. A number of issues in the field, a brief description of the decisive role of the Internet of Things technology in the agricultural system.

### Keywords

Internet of Things, Agricultural irrigation, System, Efficiency.

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## 1. The application form of the Internet of Things and its significance.

### 1.1 The basic characteristics of the Internet of Things and its significance

The Internet of Things is a faster and more efficient exchange of information between objects, and the Internet of Things is also based on the development of the Internet framework. The intelligence of the Internet of Things technology is widely used in various fields, bringing great convenience to people's lives. The intelligence of the Internet of Things is that it can be closely connected with the items in our lives, and various sensors pass information. Digital conversion enables a digital signal that is transformed from a macro application to a computer world, enabling the computer to automatically and timely identify and respond accordingly. Under the cooperation of various sensors and connected networks, the Internet of Things can intelligently process the information received, mainly in the decisive role of different needs and different control instructions.

Due to the close integration of the Internet of Things system and the Internet, an excellent advantage of the Internet of Things technology is the ability to perform large-scale data processing and analysis on the collected information, and to process the user's data on a large scale, which is greatly convenient. The user needs a variety of aspects of the system. The Internet of Things has a strong sense of perception. It uses a wide variety of sensor components, such as temperature and humidity sensors, to transmit the surrounding peripheral environment to the network, and then through the information data transmission layer, a structure that aggregates nodes to transmit information as the main task. Processing makes it easier to control and even remotely operate.

## **1.2 The value of Internet of Things in today's era**

It is precisely because of this feature and advantage that the application field of the Internet of Things involves all aspects, life is everywhere, and the industry, medical, aerospace, agriculture, transportation, environment and protection industries have a wide range of applications. Driven by the Internet of Things, these areas are more intelligent and informative, greatly improving work efficiency, and greatly improving the scope of services and working methods. For example, in the industrial production process, access to the Internet of Things can more accurately control the standards related to setting, and can also remotely monitor the production process. Although the Internet of Things technology has not matured in certain fields such as defense, military, aerospace and aerospace, it is in the stage of research and exploration, but the application brought by the Internet of Things system cannot be ignored, from tiny device equipment to satellites and submarines. Such a huge system is a key core technology for the operation of the system, and the future development of the Internet of Things technology is even more unpredictable.

## **2. Agricultural water conservancy development and the importance of water-saving irrigation**

### **2.1 The situation of agricultural development**

The development and utilization of water resources is the key to the efficiency of agricultural irrigation. The utilization rate directly affects the production efficiency in the agricultural sector. However, as a world agricultural country, China is still at a backward level for the development and utilization of water resources. The waste is still serious. Strengthening the management model of agriculture and clearing the obstacles for the full development of agriculture is a top priority in the current era.

### **2.2 Important problems in agricultural irrigation**

In order to improve the form of agricultural development, the most important thing is to solve the problems in the field of agricultural irrigation. There are many problems in China's water conservancy irrigation system. Many problems are not solved in time and need to be cultivated in the long run. As a solution to the problem of water conservancy irrigation, it is the top priority of agricultural development. The main problem is the limitation of technology on agricultural irrigation. The development of China's agricultural sector is still not perfect and the degree of automation is low. There are no corresponding instruments and measures for various agricultural situations. For example, the backwardness of agricultural equipment and the world's advanced level should be formed. An efficient and all-round automated assembly line, as well as the non-standard extraction method, can not comprehensively use the reservoir diversion, dam drainage, ground water intake, etc., which greatly caused the loss of labor costs and environmental resources. The second important factor is the lack of water-saving awareness. Since most farmers still rely on traditional watering methods, they do not adopt new irrigation methods that are efficient and water-saving in recent years, resulting in low utilization of water resources and high loss rate. The uneven irrigation field has finally caused great negative effects on the output of agricultural products. The lack of water conservancy professionals is an important problem facing China at this stage. The cultivation of large-volume related talents is not a problem that can be remedied in a short period of time. The irrigation and irrigation infrastructures of all localities belong to engineering projects. The scale is small but the number is very large. More relevant technicians and engineering management personnel can improve the operational efficiency of the project, improve the quality and quantity of the staff, and need to carry out personnel. Professional teaching, but also let relevant personnel go into the grassroots water conservancy production line, learn from practice, must not be divorced from reality, have both theory and effect, in this not only need to improve the cultivation and management of talents, but also need complete talent selection Institutions in order to be able to meet the needs of the agricultural water sector.

### **2.3 The importance of agricultural irrigation**

With the development of China and the demand for agriculture, the technology in the agricultural field has been significantly improved, but it still lags behind the current level of international agriculture. The development of agriculture is increasingly related to the people's life. At this stage, there are still many serious problems. As the author mentioned the key issues, the state should gradually expand the investment in irrigation irrigation, provide more advanced technical support, complete the agricultural management system, and enable farmers to actively and consciously understand scientific irrigation. From the perspectives of irrigation water intake, technology introduction, device automation, and comprehensive personnel training, to improve the efficiency of agricultural irrigation land in an all-round way, in line with today's energy-saving irrigation concept, we can highly respond to today's sustainable development strategy and make China's agricultural power country leap forward. A strong country in agriculture.

## **3. Application of Internet of Things in water irrigation areas**

### **3.1 The important value of Internet of Things technology for water irrigation**

To achieve modern agricultural irrigation, it is necessary to carry out scientific and scientific treatment of agriculture. If it can accurately analyze agricultural data and irrigation, and adopt a unified and efficient system, the Internet of Everything The Internet of Things has played an important role in this project.

Because the Internet of Things is based on a combination of data processing, real-time monitoring, and convenient control, water irrigation can operate efficiently. Because the number of agricultural irrigation modules is large and scattered, the traditional management method will be very difficult. The Internet of Things system can effectively control and manage various systems, and only need to issue instructions to a specific module to use or adjust the equipment. The network is transmitted to the data terminal to achieve overall control.

### **3.2 The important role of the Internet of Things and agriculture**

In terms of data acquisition, we know that the distribution of equipment in irrigation modules is relatively scattered. Therefore, interoperability must depend on various devices, and each distributed device is used to transmit information to the central monitoring equipment. The collection end can realize the soil moisture, air humidity, local temperature and even atmospheric pressure of the crops at different locations, and convert the collected macro information into computer-processable and compilable digital information by means of digital-to-analog conversion. The sensors used in soil moisture information include time domain and frequency domain. The time domain is our traditional work processing direction. For advanced frequency domain classes, because of the inclusion of digital pulses and other factors, the information becomes More intuitive, accurate, and easy to operate.

The data transmission is mainly carried out by the data transmission layer. The main task is to send the transmitted information to the gateway through wireless communication technology under the guarantee of some network security protocols. ZigBee technology has faster transmission speed and more excellent due to wider bandwidth. The compatibility shows a greater application value. In several large-scale agricultural planting areas in China, ZigBee technology is widely used in the fields of detecting soil moisture and soil acidity and alkalinity.

In this large and sophisticated IoT system, energy conservation also plays an important role. Due to the scattered equipment and many nodes, the demand for electricity is also a major strategic issue. It needs to meet the power supply problem and meet the energy conservation and environmental protection. The requirements of the sustainable development strategy, the use of solar panels has become a good way, and in the system to select some low-energy communication equipment modules, as well as voltage regulation technology to reduce losses in the transmission link, with more scientific and efficient The management method can achieve the goal of energy saving.

In the final data processing phase, the Internet of Things system can manage the entire data in a superior manner, and manage the distributed and large amounts of data in a unified manner. This operation can not only satisfy the user's simple and visual data for large amounts of data. Computer-recognized digital signals are converted into intuitive forms such as texts and pictures, which are more suitable for users to control the large-scale distributed system. Secondly, by collecting soil data, it is possible to intelligently select more scientific and rational irrigation schemes and upload the information to the cloud database, which is convenient for later data analysis.

#### **4. Conclusion**

In summary, under the cutting of the Internet of Things, agricultural irrigation will be more energy-efficient and efficient. Although the development of China's agricultural level is not perfect, the implementation of high-end technology will improve and improve the status quo of agriculture. The Internet of Things, that is, the Internet of Everything, connects the scattered grassroots irrigation systems through the basic situation of the Internet, and can comprehensively and even control agricultural irrigation and irrigation, and promote the application of the Internet of Things in agriculture in many aspects. China will soon be from a large agricultural country. Become a strong agricultural country.

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