Applications of Technologies of Internet of Things in Computer Monitoring System

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Abstract. The Internet of things technology can realize the communications between persons and persons, persons and objects, as well as objects and objects. The IOT have wide applications in the area of computer monitoring system. This paper firstly presents the concept and operation principles of IOT, then expounds the relevant knowledge of computer monitoring system, and finally gives the principles and cases of the applications of IOT in the area of computer monitoring system in order to provide references to relevant researchers.

An Overview of Internet of Things

Concept of Internet of Things. Internet of things (IOT) is the internet which can connect the things. It expand the use of internet and puts the items and internet together by infrared sensors, laser scanner, radio frequency identification device and so on, so that it can realize the all intelligent identification, tracking, positioning, monitoring, and management of items. Compared with the Internet, Internet of things has the following characteristics. First, it uses many sensing technologies widely. Second, it is the extension and expansion of the network based on the internet. Third, the Internet of things can realize the intelligent control of objects.

Operation Principles of Internet of Things. Based on the computer internet, the IOT makes use of the RFID technology, wireless data communication technology, and other technologies to construct a net covering everything in the world. In this network, objects can communicate with each other without the human intervention. Its essence is to use radio frequency automatic identification technology, through the computer Internet to realize the automatic identification of goods and the interconnection and sharing of information. The very important technology in the Internet of things is radio frequency identification technology. RFID is the abbreviation of radio frequency identification technology. It is a kind of automatic identification technology which began in 1990s. It is a kind of non-contact identification technology. Based on a simple RFID system, it combines with the existing network technology, database technology, middleware technology to build a large network of readers and countless mobile tags.

The running process of the IOT can be divided into the following four stages. The first stage is the identity of the property of the object. IOT Uses the static attribute of the tag to store the object and use the sensor to monitor the dynamic attribute of the object. The second stage is the pretreatment of the item attribute information. After obtaining the static and dynamic properties of the goods, IOT starts the storage, reading and information conversion and other pretreatment. The third stage is the transferring of property information. The network layer collects data and then transfers to intelligence gathering gateways. Through the convergence gateway access to network layer of IOT, it uses network via network layer broadcast TV network, Internet, telecommunication network to make sure that the article attribute information is transmitted to the IOT application layer. The fourth stage is the application of application layer implementation of underlying sensing layer and management layer perceptron. The IOT completes the communication between the items and information sharing related calculations in the application layer, and packages the information into a variety of applications for users.

An Overview of Computer Monitoring System

Concept of Internet of Computer Monitoring System. The computer monitoring system is composed of the monitoring control computer, the detecting device and the executing mechanism, and the object which is monitored and controlled. In this system, the computer is directly involved in the monitoring of the object detection, supervision and control. It has the following three functions. The first function is the information acquisition and processing. It is mainly to be monitoring the parameters of the object detection, sampling and necessary pretreatment, and in a certain form of output, to provide users with detailed data, in order to facilitate their analysis and understanding of monitoring, monitoring and control process. The second is the supervision function. The real-time data, artificial input data and other information are analyzed, summarized, processed, calculated and processed two times, and made real-time and historical database to store. According to the actual monitoring process needs and monitoring process, the system analyzes and diagnoses the faults, then gives the map, text, sound and other forms of make timely reports in order to carry out the operation guidance, accident alarm. The output of the system is generally not directly used in the monitoring process, but in the process of intervention after the user's judgment. The third function is the control function. On the basis of the detection of information processing, it is directly used in the monitoring process according to the decision of the control strategy. A complete computer monitoring and control system is a comprehensive integration of the above three functions, which makes use of the characteristics of high speed, large capacity and intelligence of the computer, and can organize and manage a complex monitoring process into a comprehensive, complete and efficient automation system. Of course, in the actual use, it can be based on the actual needs of the object. The system may have only one or two functions; or a given priority supplemented by other functions. These measures can be more aimed at the needs of practical applications in order to reduce costs and enhance maintainability.

Operation Principles of Computer Monitoring System. The working principle of computer monitoring system can be summarized as following four processes. The first process is the real time data monitoring and input. The corresponding physical state of the controlled object is monitored in real-time by using the sensor and the information is converted into an electrical signal which can be identified by the computer; second, the real-time data analysis and control decision making. The operator or the computer set the default processing program through the analysis of digital, graphics or curve to show the information of the controlled object to make control decisions; third, real-time control output and task execution. The output device to control information in the form of electrical signals transmitted to the executive body, the executive body responsible for the implementation of control tasks; the fourth process is the implementation of real-time feedback control. The state feedback can be realized through the sensor collecting or the state information of the sensor execution state. Finally, the state feedback is transmitted to the host computer through the transmission device.

Applications of Technologies of IOT on Computer Monitoring System

With the rapid development of the Internet of things technology and the intelligent security monitoring system, massive monitoring probe and monitoring data cannot completely rely on manual analysis and monitoring. The Internet of things can identify objects and connect them with the Internet, monitoring and controlling the data faster and better. Here are a few examples to illustrate the application of the Internet of things in computer monitoring system.

Greenhouse Monitoring System Based on IOT. Greenhouse environmental monitoring system is the key technology to improve the crop production and reduce the labor cost, which represents the core competitiveness of the greenhouse production. With the rapid development of sensor technology, computer control, network communication and Internet of things, the intelligent monitoring system of the high technology has been applied to the field of greenhouse monitoring. But the system mainly focuses on a single greenhouse environment information acquisition and the equipment and simple control, the intelligent level is not high. It is difficult to expand the

application in the large-scale multi span greenhouse environment control. But the domestic greenhouse construction is precisely based on the greenhouse group composed of multi greenhouse, in this new situation, the current greenhouse intelligent monitoring system in the design of hardware and software, to be based on a unified agricultural networking technology framework, in the premise of ensuring the safety of equipment control, the environment intelligent control algorithm applied to the greenhouse production management, build a high scalability, universal greenhouse environment intelligent monitoring system. The remote monitoring subsystem is B/S architecture, which consists of data acquisition layer, logic application layer and presentation layer. It can realize the acquisition and control of the greenhouse information, and provide quick and friendly user interaction logic. It has functions such as user registration management, real-time environmental information preview, history data query and export, equipment remote control, video monitoring and so on. The database is the bridge between the remote monitoring subsystem and the field monitoring subsystem. The field monitoring subsystem can be used to store the real-time environment data, equipment status information and equipment control log into the database, which can be used for the historical inquiry and analysis. On the one hand, the remote monitoring subsystem shows the information stored in the database to the remote user. On the other hand, the control command of the remote user is written to control the devices of the greenhouse.

Granary Monitoring System Based on IOT. During the storage period, due to changes in the environment, climate and ventilation conditions and other factors, the temperature or humidity in the granary will also change dynamically, which is easy to cause the decay of the grain. According to the particularity of grain storage, the monitoring system is mainly based on the temperature and humidity of grain. The monitoring system is mainly used to collect, store and transfer data of temperature, humidity and gas concentration, and transfer data to the monitoring center, as well as the function of monitoring center. In the traditional monitoring and early warning system, the data communication mode of the cable connection is mostly used in the barn and the monitoring center. It is difficult for the remote communication. When a node appears, it may affect the smooth of the whole system, which is not conducive to the monitoring and management of the barn. Now, the transmission of information through the wireless network card to the food management department owned enterprises are all connected, all the internal enterprise through the wireless data transmission module to collect all the data collected by a variety of sensors, and timely reporting to the food management department can be realized at any time monitoring. Wireless sensor network is one of the key links of the monitoring system, which mainly uses the distributed structure, the wireless sensor nodes are forwarded through multi hop, through the gateway access network, in the network task management node to manage, classify, process, and then send the sensing information to the user. The research and development of effective and practical wireless sensor network structure is the basis of the construction of wireless sensor networks. The main structure of the intelligent control system for the intelligent control system of the Internet of things is the honeycomb type. The closed-loop control system is composed of the sensor and the actuator. Database content is mainly the historical records of environmental factors, including the monitoring point location, monitoring range, monitoring mode, operator information and other basic data. The monitoring system uses these data to carry out scientific and rational analysis and processing.

Refrigerated Truck Monitoring System Based on IOT. The food in the refrigerated truck mainly includes fresh meat, fruit, vegetables and dairy products, cold drinks, health food, which has high environmental requirements. It’s necessary to design a remote intelligent monitoring system based on Internet of things technology. The system is composed of multi point temperature and humidity acquisition module, gate switch monitoring device, RFID module, vehicle monitoring module, GPRS/GPS module, wireless communication network and remote monitoring center. Based on the advanced IOT technology, the system combines the existing sensor technology and wireless communication technology to achieve real-time and accurate monitoring purposes. The temperature and humidity sensor with high performance of temperature and humidity acquisition module is used to read the real-time temperature and humidity data in the carriage. In order to measure the temperature and humidity data in the box, a plurality of temperature and humidity

acquisition modules can be arranged in different places according to the actual needs. The door switch monitoring device is used to monitor the state of the box door and avoid the loss of goods during the transportation. Real-time monitoring of the carriage door switch is required in order to avoid the loss of goods in the transport. Door switch state monitoring device using the sensor to detect the refrigerated. It records the related information and transmits the information to the remote monitoring center to realize the monitoring of the refrigerated truck.

Conclusion

The internet of things technologies involve the technology of the acquisition, transmission and processing of information. At present, the Internet of things technology has been widely used in computer monitoring system, such as greenhouse monitoring system, granary monitoring system and refrigerated truck monitoring system. The scientific research institutes are actively exploring to make the technology more widely used in the area of computer monitoring system to bring greater benefits for humans.

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