Intelligent community system based on Internet of things design research analysis

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ABSTRACT. The construction of intelligent residential area to the building industry into a complete and practical direction of information network development, to accelerate the pace of urban modernization management system can realize the automatic control of the corresponding equipment, the entire area within the electronic equipment integrated into a whole, realize the intelligent management for community as a whole, improve the whole village residents living environment and safety comfort.

KEYWORDS: the Internet of things, intelligent community, the hardware and software design

1. Introduction

Along with the continuous development of Internet technology and the increasingly update, intelligent community has gradually entered people's life, for people's living environment has a certain influence. Both home and abroad in terms of intelligent community has begun to intensify efforts to study, make intelligent residential area has a broad space for development in the future. Intelligent residential use of the Internet and Internet of things in form to optimize the data communications, integrated wiring, linked with multimedia devices, can realize the automatic control of the corresponding equipment, the whole community of electronic devices integrated into a whole, realize the intelligent management for community as a whole, improve the whole village residents living environment and safety comfort[1].

2. The Internet Of Things Technology

Iot technology at the core of the technology and technical foundation is still the original Internet technologies, mainly in the field of Internet technology on the basis of the corresponding technology and extending depth of mining, the integration of sensor technology to form a kind of network technology with a new idea. Internet of things technology to any of the world's physical distribution between an address and then the content and content through the relevant technology to connect to form a

whole, to implement the data transmission of connection between information sharing and communication[2]. So the Internet of things technology is defined as the existing RFID technology by RFID, sensor equipment, communications equipment and so on according to certain constraints agreement will dock with the network, data communication, communication between each object objects give signs of life, so as to realize the object has an external signal perception, data transfer and communication between, between all objects for the management and control of intelligent network technology.

3. The Internet Of Things Technology Network Structure

Iot technology network structure is mainly divided into three levels: perception layer perception is perception of things is an important part of the network layer by qr code and RFID and sensor network data transmission between the implementation of the cycle of data transmission through the existing mature Internet and communications network; Application layer that is intelligent processing application technology part by cloud computing and data mining, and middleware technology, such as automatic control and intelligent management of business objects[3]. In the Internet of things technology system structure on the performance of recognition is mainly the three layers, the bottom is perception layer, the middle for the network layer, the top for the application layer.

Perception layer is the Internet of things - limbs and facial features lots of system, is the realization of external object recognition and information collection, the equipment is mainly including qr code, the qr code reader, RFID tag and RFID read-write device, digital network cameras, function mainly reflects in the recognition of the outside things and the collection of information, and the body's sensory organs with similar functions. The network layer is the Internet of things - transport central nervous system, is the Internet of things system an important part of data transmission in the network layer of the data transmission channel mainly including mobile Internet, Internet, etc., as well as communication and fusion of Internet network function is mainly embodied in the perception layer for transmission of data information, similar to that of human body central nervous transmission system functions.

Application layer is the system of Internet of things that lots of division of society, to use the underlying technology application in the industry, in view of the market demand for industry design meets the needs of industry application of intelligent products, to be able to experience and technology perfect union, in-depth excavation and field technology innovation, implementation of all walks of life utensils themselves designed for intelligent application, in a should be separated with the overall elaboration, then the segmentation technology integrated into a whole through the Internet of things technology, implementation of the so-called - social division of labor and the existing industry has the same effect.

4. Zigbee Wireless Communication Technology

ZigBee short-range wireless communication technology is mainly used for short distance and low power consumption equipment application scenario of data transfer between communication, but also can adapt to the requirement has a certain cycle of data interaction and way of interval data interaction environment application. ZigBee is cellular network configuration, data timely and accurate transmission each other between node equipment. ZigBee wireless communication network is the only through the network coordinator implementation of network data summary, as a relay node routing node routing nodes in the network, the router can realize network expansion and also can achieve data collection, terminal node for scenario the forefront of implementation of data acquisition, data collection and transmission terminal are gathered to only the coordinator node in the network to send controller by the coordinator. Whole in ZigBee network use is particularly important, like writing, have only the entry point for the main function, in the same network requires only a coordinator and devices, but can have multiple theory even within the scope of all the routing node equipment and terminal equipment.

5. The System Hardware Architecture As A Whole

Intelligent community system based on Internet of things is used to implement the intelligent community management and intelligent building, improve the scientific management of residential property to better service for the owners of the community.

Intelligent community management system mainly includes property management module, intelligent lighting system control module, video monitoring module, property management personnel positioning module, intelligent entrance guard control module, irrigation district greening module, for household gas concentration of smoke concentration housing leakage intelligent detection module, alarm module, the combination of multiple modules as a whole are used to implement the intelligent community system.

This study scheme for communication between USES is Ethernet, which makes the whole system has formed a whole between modules, module of transmission using custom proprietary protocols for data transmission, define specific packets and head, and use a custom encryption way, to send the data for data encryption, every 30 seconds transmission time, in the center of the property management platform for data receiving, at the same time to determine whether a private agreement in baotou and tail right and at the same time, according to the encryption key for the corresponding decryption operation, the data stored in the database, automatically refresh a platform for five seconds, so as to realize the real-time monitoring of data display.

Power for data backup solutions using different disaster backup, ensure that send real-time data can display real-time monitoring on the property management system. The basic idea of this system by means of science and technology will each structural unit in electronic equipment independent system for deep integration to form a whole, through the way of comprehensive deployment lines connect all the

devices together, achieve in all public equipment and special equipment of intelligent community combination of monitoring management.The aim of the construction of intelligent community system is a residential area for the owners to provide a safe and reliable, comfort and convenience, good living environment for the sustainable development of energy saving for service, the owners and property management department will be able to get some security, improve the management efficiency of the property and quality of work.

6. Intelligent Community Management System Software Design.

Software system is the internal of the system, is to integrate the depth of the intelligent village is connected into a whole, the brain to work system of the whole operation is carried out by the software system. Intelligent community system integrated software system mainly includes the property management system, video monitoring system, lighting control system, property management personnel positioning system, intelligent entrance guard control system, village green irrigation systems, household monitoring system, alarm system of several parts, with similar hardware system module, program design adopts the modular design concept.

7. Conclusion

Along with the constant innovation and development of our country science and technology, Internet of things technology as one of important research techniques, make its affiliated areas get another round of strong development opportunities, the intelligent community system based on Internet of things can realize the function of the expected requirements and performance requirements, to promote community residential intelligent management and service level, enrich the existing application the technology content and function of intelligent residential system, make intelligent residential area can be wisdom city from the real one point, and then connect between each point into surface and realize intelligent city.

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