

Design and Application of Intelligent Home System Based on Internet of Things Technology

Weiwei Wang, Zijian Liu

Shaanxi University of Science & Technology Xi 'an, Shaanxi 710000

Abstract: In recent years, our country continuously improving science and technology, promoting the development of the Internet of Things technology. Internet of Things technology has a wide range of applications, has been gradually applied to various fields, especially in the field of smart home, and has achieved good application results. The application of the Internet of Things technology in the intelligent home system realizes the scientific control of the computer system and improves the modern, intelligent and convenient level of people's life. This is also the main direction of the development of the future home market, the relevant enterprises should attach great importance to it, strengthen the optimization and design of the system. This paper mainly discusses the design and application of intelligent home system based on the Internet of Things technology.

Keywords: Internet of Things technology; Smart home; System design; Effective application

Introduction:

Smart home is mainly installed in the living space of intelligent system, realize the efficient integration of home, can realize the scientific management of family resources, improve people's living satisfaction and comfort, so as to achieve sustainable development. Intelligent home system is favored by people, its application is more and more common, has obtained good application value. The Internet of Things technology plays an important role in the smart home system, and has good application effects in access control module, monitoring and alarm module, fire control module, three-table CC module, lighting module, household appliances module and communication module. This paper is mainly from the definition of smart home, system structure design and effective application of three aspects to expand further discussion.

1. Definition of smart home

Intelligent home iot is an integrated system, which mainly takes the living space as the platform to build intelligent home system. Smart home system contains a number of technologies, mainly integrated wiring technology, network communication technology, security prevention and control technology, automatic control technology, most of the system uses the way of integrated wiring, has a good application effect. Security prevention and control technology is essential, enabling visual dialogue within the community, while monitoring the home, etc. Communication technology provides signal support for the interior of the building, which is one of the key links. Automation technology can realize the scientific management of intelligent equipment and improve people's quality of life. Smart home has a multifunctional system, can realize the management of family life, to provide people with quality services. In the future development, the function of smart home system will be more diversified, and the structure design will be more complex.

2. Structure design idea of smart home system

When designing smart home system, it can be divided into three layers, namely control layer, information layer and application layer. First of all, the control layer mainly integrates monitoring, fire protection, three table CC and intelligent household appliances to achieve comprehensive control and management. Secondly, the information layer is mainly to classify each subsystem, so as to carry out scientific grouping. Finally, the application layer is the integration of all subsystems. In this way, the devices separated by subsystems can be connected to give full play to their functions. At the same time, information sharing can be realized, interconnection

and interoperation can be realized, and each subsystem can be controlled by the master controller to realize data communication, information collection and other comprehensive functions. This whole system can have higher reliability, fault tolerance and scalability^[1].

3. Application of intelligent home system based on Internet of Things technology

3.1 Application of Access control module

In the home access location installation door host, with camera and phone functions, owners can through the system and visitors dialogue, confirm the identity of visitors, visual intercom, to avoid criminals entering the room. In terms of access control, encrypted card reader is adopted to verify the identity of the personnel in and out. Only the personnel with IC card or password can enter normally. At the same time also installed the wireless door magnet and sensor, when illegal elements enter, the system can automatically send an alarm, and record the call and location information, display the corresponding image information, to provide reliable information support for the alarm. Access control system can play a good protective role to achieve stable development.

3.2 Application of monitoring and alarm module

Video surveillance is mainly composed of DCR and front-end camera, in which DCR has the function of image information preservation and processing, video can be converted into digital information, and transmitted through the network system, to achieve a high degree of information sharing. At the same time, the video information can be quickly located and accurate playback, and the alarm system linkage. The front camera has a hidden function, which is generally not easy to be found. It can effectively record the behavior of relevant personnel and can be used together with the access control module. Infrared detectors can be set up indoors, and gas, temperature and smoke detectors can be set up in the kitchen to connect all the systems and realize automatic alarm. When the system detects abnormal data information, it must upload it to the terminal in time to judge the abnormal situation, send an alarm, and start the emergency mode to effectively avoid risks^[2].

3.3 Application of fire control and linkage control module

Fire safety is very important for indoor. If there is a fire, the fire detector and alarm system will take effect immediately. Through the linkage of information, the fire control system can be activated, the indoor automatic fire extinguishing device can be started, and the indoor power supply can be disconnected to avoid the expansion of adverse effects. After a period of time, if the extinguishing device is still in operation, the system can automatically dial the fire alarm phone, providing location and fire situation information, so as to realize linkage control. In this way, firefighters can quickly arrive at the scene, deal with the fire, maintain the safety of the building and improve people's quality of life.

3.4 Application of three table automatic CC module

People will use water, electricity and gas in their daily life, so it is necessary to record the use of these three resources to complete the related payment work. In the smart home system, electronic sensing technology can be used to transform it into a digital instrument, which can carry out materials and analysis on the data information, transmit the data through the network system, and send the details to the corresponding functional departments. The intelligent department provides the related content of payment according to the corresponding data information, bringing greater convenience to people's life.

3.5 Application of intelligent lighting control module

People's Daily work and life can not be separated from the support of the lighting system, in the smart home system, the lighting system consists of a number of parts, including computer technology, communication technology and the corresponding dimming technology. The lighting system can adjust the indoor lighting system according to the specific indoor lighting situation, realize automation and intelligence, which can realize the saving of resources and avoid unnecessary waste. The system can effectively control the light through the human body and moving sensors. When someone enters the corresponding space, the system will make the light on, and when the person leaves the space, the light will be automatically extinguished. The lighting module can also realize clock control and systematically adjust the light according to the changes of day and night. When it enters the late night mode, the light can be automatically weakened, which can not only protect people's sleep, but also effectively extend the service life of the lamp, create a high-level indoor living environment, and realize sustainable development. This can also promote the progress of the home market, improve people's quality of life, enhance people's living comfort and security^[3].

3.6 Application of household appliance intelligent control module

In the indoor environment, will use a lot of home, such as: computer, TV, air conditioning, refrigerator, etc., which is an indispensable part of the home. The system can encode these appliances, and then give the corresponding website to visit, so as

to realize the intelligent control of electrical appliances. Owners can use their phones, set up their usage, and know how much they wear and tear. The system can also be automatically regulated according to people's needs, so as to realize the effective use of resources, avoid the long-term efficient operation of electrical equipment, to a certain extent, aggravate their losses, but also increase the burden of indoor operation. For example, air conditioning can automatically adjust according to people's physiology. When people enter the sleep mode, they can adjust to the temperature suitable for human sleep. Smart sofas and beds can be controlled, adjusted according to people's sleeping habits and fatigue levels, and provide massage and other functions to further improve people's quality of life.

3.7 Application of communication modules in system networking

In the whole indoor system, communication module is very important, but also an indispensable part of the system, can realize the effective connection of each module, but also can improve the efficiency of the system operation. If there is no communication module, intelligent household appliances will not be able to operate, the system will be paralyzed, difficult to meet people's normal family needs. When designing, relevant enterprises should give full consideration to communication modules, optimize the communication system, further enhance the indoor signal, ensure that the signal can radiate to every corner of the indoor space, meet people's needs for the network, and realize the unobstructed communication and video viewing, so as to achieve sustainable development.

Concluding remarks:

In a word, the Internet of Things technology is very important for the smart home system system. Relevant enterprises should attach great importance to it, combine people's actual needs and technical capabilities, innovate the traditional home system, optimize the structure of the smart home system, adopt the modular and integrated design idea, build a convenient and functional system, and improve people's quality of life. Promote the sustainable development of the household industry. The application of the Internet of Things technology can also improve the security of people's home life, guide people to live a green and healthy life, and effectively avoid risks in people's life, injecting new vitality into the development of the home market.

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