

Research on application of Internet of Things technology in smart home design

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Abstract: With the rapid development of social economy, science and technology to promote people's quality of life continues to improve, smart home market came into being, has broad prospects for development. In the field of smart home, the application of Internet of Things technology can break the traditional home management mode, enrich people's home life experience, and make the living environment more comfortable. Based on this, this paper will focus on the application of Internet of Things technology in smart home design research.

Key words: Internet of Things technology; Smart home; Apps; Research

The application of intelligent technology and Internet of Things technology has increased the added value of the home industry and made the smart home management work continue to progress. With the emerging information technology continues to be applied to all areas of daily life, artificial intelligence, cloud technology to accelerate innovation, smart home for the construction of information technology put forward new requirements. Therefore, it is necessary to use the intelligent Internet of Things management service platform to achieve the integration of home resources, realize the upgrade of home management information services, and provide users with more comprehensive services.

I. Smart home and Internet of Things technology

Smart home is a new technology-based concept to realize intelligent home life. With the improvement of our people's living standards, the pursuit of material life continues to increase, people's various needs for home living standards are also changing, intelligent home industry is also produced in this demand. The realization of the concept of smart home can not be separated from the Internet and communication technology, automatic control technology and other new technologies to support, such technology can promote home equipment to achieve intelligent networking, communication through wireless network, interconnection, to build an intelligent, convenient and humanized way of life. At present, intelligent home has gradually become an important part of modern life. Under intelligent technology, home life is more intelligent and humanized, which can improve users' life experience. In the future, the market development opportunities of smart home will be broader, and intelligent technology will inevitably become an integral part of smart family life.

The Internet of Things technology is based on modern information technology, the existing advanced technology after the integration of the system, such as the integration of automatic control technology, remote sensing technology, the Internet cloud platform to manage and control data equipment. The application time of Internet of Things technology in China is still relatively short, based on ecological information collection and intelligent equipment application, to realize the integration of digital intelligent technology into production practice. The combination of digital technology and Internet of Things technology can reform the traditional production mode, and gradually enrich people's material life and spiritual needs. The Internet of Things has entered every level of the economy and every aspect of life. The application of the Internet of Things technology in life practice needs to promote the application and scheduling of information resources. The structure of the Internet of Things technology is gradually complex, forming a relatively perfect mechanism.

II. The principle of Internet of Things technology

From the technical architecture analysis, the Internet of Things contains three levels, namely the perception layer, the network layer and the application layer. The perception layer mainly controls the identification of objects and the collection of information, such as the identification of physical, chemical information, signs, audio and other information, and transmits information to other levels; The network layer is responsible for processing and transmitting the information collected by the perception layer; The application layer is an important link between users and the Internet of Things. In specific applications, it can be used as a service platform or a management platform.

The principle of the Internet of Things technology includes sensing technology, radio frequency identification technology, Zig Bee technology. The first is sensing technology, which is mainly used in the collection, processing and identification of information, with high efficiency, strong reliability, and high precision technology involved. It is a kind of interdisciplinary science and engineering technology. Sensor technology in the process of information acquisition can reflect its advantages: promote the digitization of data, through the sensor data into digital signals, improve the transmission efficiency; Realize the manufacture of multi-functional form sensors to ensure that the functions required by users are realized; Timely upload data and analysis through networking. The second is the radio frequency technology, which can pass the obtained information into the system through the identification and detection of the logo, and achieve accurate positioning through scanning and data transmission. Its advantage is that the target can be identified without direct contact, and the identification logo can be replaced, reused and deleted, which has certain convenience. The third is Zig Bee technology, which can be regarded as a special Bluetooth device, its application of low energy consumption, large capacity advantages, can connect multiple devices, so that each device to achieve network sharing, promote the data transmission of equipment.

III. The specific application of Internet of Things technology in smart home

The rapid development of Internet of Things technology has brought broad space for the development of smart home and formed a new development model. Smart home makes the traditional home appliances have been technically upgraded, not only to meet people's growing home needs, but also to integrate intelligent control into home life, such as smart door locks, lights, home appliances and so on. At the same time, smart home also includes security monitoring system, networking smoke alarm, security remote monitoring and other equipment put into use, can enhance the safety of family life. Through the system of radio frequency identification, positioning and remote sensing technology, the smart home in the house can form a connection with the user's client, which is convenient for remote control to realize the monitoring and management of the house. The specific application of Internet of Things technology in smart home mainly has several aspects: the first is the control of lighting or daylighting. Residential light intensity and living comfort has a greater correlation, lighting is a priority part of residential design, the application of Internet technology, can be intelligent control of the lighting, curtains and other devices in the house, so that the light is kept in a comfortable degree. The lighting equipment can also be associated with the device that emphasizes the detection of outdoor light, and controls the curtains and adjusts the light according to the change of light. The second is the control of indoor temperature, the control of temperature and humidity inside the house will also affect people's living comfort to a greater extent. The application of Internet of Things technology can connect air conditioning and humidifier and other equipment, and carry out intelligent setting and detection of the value, so that the indoor temperature and humidity can be maintained at an appropriate level. In addition, for the control of smart home, the Internet of Things technology can realize the remote operation of smart home appliances, such as reminding users to forget to turn off the air conditioner and faucet outside, reducing unnecessary waste of resources in daily life.

IV. The application of Internet of Things technology in smart home design suggestions

1. Consider user needs and adapt to the development environment

Internet of Things technology has a certain complexity, the application of high requirements in smart home, Internet of Things technology in the application mechanism of smart home has gradually become a comprehensive whole, with the emergence of new technologies and put into use, the Internet of Things system will be constantly updated. Therefore, in the design of smart home based on the Internet of Things technology, the needs of users need to be fully considered. The pre-school of smart home products can be divided into rigid demand and flexible demand, rigid demand includes the main needs of users for health and safety, such as products with strong security performance, smart home appliances, etc. The flexible demand is used to meet the needs of users for leisure and entertainment, more diversified experience, such as smart audio, smart game equipment. The more diversified and personalized needs of users also promote the dynamic construction of the Internet of Things system. To ensure the sustainable development of the smart home, the Internet of Things technology needs to constantly adapt to new technologies and access methods, dynamic environmental requirements, improve the coverage of functions, the scope of access to the smart home business, and adapt to the higher requirements of users.

2. Improve the security factor and protect user data

Smart home applications involve a large number of users' personal information or privacy, so the Internet of Things technology needs to strictly protect or manage the user's information security, and take systematic management and protection measures to ensure the information security of the smart home system. First of all, it is necessary to carry out more stringent requirements and security assessment of smart home, screen some security loopholes in the system and take timely maintenance measures to repair them. Secondly, the Internet of Things system needs to build a more perfect access control mechanism to ensure that sensitive data is not passed or read at will, and set up special authorized personnel to access the authority. Or encrypted data transmission, reduce the probability of theft or tampering, can also effectively improve the security factor of the Internet of Things system. In addition, it is necessary for managers to establish a suitable security monitoring system to discover and deal with security-related problems in a timely manner. For the needs of smart home systems, the management of the Internet of Things should take into account real-time and effectiveness, ensure efficient data transmission and processing, and improve system stability. Specifically, the network construction of the system can be optimized, focusing on reducing network delay, improving data transmission efficiency, upgrading the communication protocol in time, choosing a more efficient transmission mode, establishing a monitoring and early warning mechanism and timely processing of found faults.

3. Establish industry standards and promote independent research and development

At present, the development of smart home is accelerating, but there is still a non-uniform problem in the standards of the industry, the industry has not formed a unified technical standard, the product compatibility of each brand is poor, software development, terminal manufacturing, suppliers are developing separately, there is no coordination. This leads to incompatible intelligent products continue to appear, the lack of industry communication, the user experience will also decline, consumers in the development of smart home construction plan, but also need to consider the problem of mutual incompatibility, reducing the choice of consumers space. At the same time, the lack of industry standards has also led to the imperfection of market research work, the lack of product practicality, the operation is more complicated, and the actual needs of users are not consistent. Some product quality stability is poor, the design is not humanized enough, there is no clear concept of intelligent design, does not meet the real needs of the market. Therefore, it is necessary to promote the cooperation and exchange between smart home manufacturers, promote the flow of technology and talents, promote healthy competition in the market, and then improve the development system of smart home, promote cooperation and competition. Only the same direction between manufacturers, unified standards, and promote the prosperity of the industry can promote the power and ability of independent

research and development of the industry, increase investment in technological innovation and talent cultivation, design smart homes suitable for public demand, and promote the sustainable development of technology.

4. Optimize the management system and reduce the system cost

In the Internet of Things smart home management system, to establish the system requires a lot of equipment support, human and material resources investment, which needs to increase the importance of cost investment. In order to reduce the cost of smart home Internet of Things technology, we first need to optimize the system design, improve the application efficiency of hardware and software, fully apply the current existing resources, and reduce the waste of resources. At the level of software design, more advanced algorithms can be adopted to improve data transmission and system operation efficiency. Secondly, it is necessary to expand the system, fully consider the future will increase the needs of various users, and adapt to the upgrade needs in advance. In the design practice of the system, it is necessary to consider the possible technical upgrade and analyze the future demand changes, so as to leave enough space for the subsequent system expansion and reduce the cost or risk of follow-up work. Furthermore, it is necessary to strengthen and optimize procurement, logistics, management and other links in all aspects of the smart home system, from the selection of suppliers to procurement, management and other aspects, to carry out comprehensive optimization, reduce the cost generated in procurement and other aspects, and strengthen the management and control of logistics timeliness. Finally, we need to pay attention to the training and management of talents, improve the comprehensive quality of talents, improve the management of talents, and then lay a good foundation for the system construction, operation and maintenance work.

All in all, the Internet of things has gradually become an important part of the smart home market, but also led to the progress of the traditional home market, reform the situation of the previous home industry, has an important breakthrough role in technology. The Internet of Things can effectively promote the development of intelligent home technology, effectively promote the overall progress of the market, and modern living experience can also enable users to enjoy more and more comprehensive intelligent services. The application of the Internet of Things technology can also assist users to achieve a more rational smart home consumption and fully enjoy the services and experience brought by modern technology.

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