

Design and Innovation of Smart Home Device

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Abstract: The rapid development of science and technology has brought tremendous changes to people's production and life, and people have ushered in the information age and the Internet age. In the context of the Internet era, intelligent home furnishing is an inevitable trend of development. Increasing the functions of smart home furnishing and designing and innovating it can meet more needs of people. Based on this, this article will analyze the smart home design and innovation in the context of the Internet era.

Keywords: Internet era; smart home; home design

Introduction: With the advent of the Internet era, operations and production in a large number of industries have become Internet-based, as are smart homes, which can rely on the Internet to perform various operations on homes in residences. Smart homes have been around a few decades ago. The United States has established the world's first smart building. China has also introduced smart home concepts for more than thirty years, but there are still some deficiencies in the design and innovation of smart homes. Need to continue to work hard.

1. Overview of Smart Home in the Internet Age

Smart home regards people's residence as a development space, integrates household equipment as a whole through network communication, integrated wiring, audio and

video, automatic control, security solutions, and other technologies, and establishes an efficient facility management system. This technology is implemented based on the Internet. Smart homes have a variety of functions and can provide people's residences with various services such as timing control, heating control, environmental monitoring, remote control, opening and closing control, video phone, and security alarm. When people use smart homes, they can make their living spaces safer, more convenient, comfortable, and faster. Compared with ordinary houses, the living space of smart homes not only has the function of living, but also has a complete Internet function, but also to a certain extent. Save water, electricity, and gas costs. With the widespread use of the Internet, informatization has brought varying degrees of impact to people's daily lives, and more and more users have begun to choose to use smart homes. At present, the construction process of smart houses and smart communities has been greatly accelerated, and the smart home market has achieved good development, especially in the field of building control and anti-theft alarms. According to relevant survey data, the market demand for home entertainment, home environment, and home control is the most urgent. Although smart homes have achieved rapid development in recent years and have good development prospects, the number of related smart home companies has also increased year by year. However, among these companies, many companies only produce and research a single smart product, and do not target multiple homes. The environment develops a corresponding full set of smart home products. Various smart home companies and research institutions are numerous, but there is no corresponding communication and contact mechanism between each other, and there is no common Internet network communication standard. Each company's products use different types of software. Users use smart home It is necessary to install a lot of software, which

greatly increases the difficulty of use so that the smart home environment is not systematic.

2. Smart home design in the context of the Internet era

(1) Reliability principle

In the context of the Internet era, it is required that the intelligent system of residential space should be kept running 24 hours a day, and the system must have high reliability and security. Each subsystem of the smart home system must set certain fault tolerance measures in terms of network stability, software system, power supply, etc. so that the stable and safe operation of the smart home system is guaranteed, and the system always maintains good performance and quality. A complex environment should have a strong coping ability.

(2) Convenience principle

In the context of the Internet era, the convenience of smart home installation is closely related to the user's cost of use. The selected wiring system should be relatively simple. In the process of wiring construction, it should be wired together with the radio, television, and residential broadband to save the installation cost of a smart home. The installation, operation, and maintenance of the smart home should be easy for users to learn, and the debugging process of the system should also be simple and convenient [1]. In general, there are obvious disadvantages of intelligent equipment, that is, maintenance, debugging, and installation work are time-consuming and labor-intensive. It takes a lot of manpower and material resources, which makes the development of the smart home industry subject to certain restrictions and becomes its Bottleneck in the

development process. To effectively solve this problem, the convenience of maintenance and installation should be considered at the early stage of intelligent system design. For example, during the maintenance and installation of smart homes, users can use the Internet to remotely operate the system, or allow professional engineers to remotely check the operation of the system to repair and diagnose the faults of the intelligent system in time, so that The entire system can be remotely operated for repair, inspection, update, and software settings, making system maintenance more convenient, improving the quality and speed of smart home services, and effectively saving maintenance costs.

(3) Practicality principle

The design of the smart home is mainly to make the user's residential space more efficient, convenient, safe, and comfortable. In the context of the Internet era, the most important core of smart home products is practicality, removing the unrealistic elements of design and functions that can only be used for decoration, and making practicality, humanity, and ease of use the ultimate goal of smart home design.

(4) Standard principle

The design of the smart home system should be carried out according to the relevant national and regional standards, so that the entire system has certain scalability, and the IP/TCP network protocol technology should be used in network transmission so that various products can be interconnected with the system. compatible. The equipment used to connect to the intelligent system should be open, multifunctional, and extensible, such as the standardized design of modules, terminals, and cost structures.

(5) The principle of advancement

The designer of the intelligent system must not only consider the current needs of users but also consider the trend of smart home development in the future, not only to ensure the advancement and advancement of smart home technology but also to comply with advanced specifications and standards To comply with the development trend of future technology, the smart home system can be upgraded, expanded and updated following the progress and development of technology. When designing the system, there must be a certain degree of openness. The data management system, network system, communication interface, hardware, software, etc. must meet relevant international standards, so that the intelligent system will have better scalability and compatibility in future use.

3. Smart Home Innovation in the Internet Age

(1) Intelligent appearance

New materials are needed to adjust the appearance. Smart textiles and other materials can give the home a changeable appearance. Such textiles generally have special fibers, which are embedded with open source programming controls, sensors, microcontrollers, etc., so special fiber fabrics will respond to the stimulus factors existing in the environment, such as temperature adjustment, color change, memory, etc. Textiles with sensors and microcontrollers can have functions that traditional textiles cannot, such as controlling temperature, converting energy, luminescence, etc. [2]. Such textiles are also used in the design of outdoor clothing, which can increase the performance of athletes and cope with extreme weather, etc., and gradually develop into the design of daily clothing. For example, London designers embed Led ultra-thin circuits in clothes by hand embroidery, when in relatively dark places such as parties, dinners, and concerts, it

can emit bright light and attract the attention of others. PER carpet is a product of cooperation between a Dutch designer and a Desso carpet company. The part of the carpet that people meet will have an electro-optical response. When people touch or pass the carpet, there will be some light patterns temporarily staying. After setting up the intelligent induction system, two carpets are placed in the house, and after taking action on one carpet, the other carpet will also show up in time. When applying this technology and materials to the home, such as walls and sofas, through intelligent color control and temperature detection, the graphics and colors can be changed according to the season or residential atmosphere and can be adjusted to be gentle in daily life. Colors, holding parties, and another relatively lively and happy atmosphere can be adjusted to bright colors, but there is no need to use a lot of textiles or manual replacement by users.

(2) Improve existing functions

A smart home plays an important role in people's houses. To keep it consistent with the user's living habits, it should use intelligent ways to improve its functions. A window is an important place for the residence to be ventilated and exposed to sunlight. The curtain plays the role of blocking sight and sunlight. Its soft material does not make the space closed. At night, when people sleep, they want to make the curtains half-shield the windows to ensure ventilation. During the day, they want the curtains to completely block the sunlight. The general drapery curtains are either fully open or fully closed. Although the blinds can be half-closed and half-open, they must be The user manually adjusts the angle [3]. If you can use the degree of intelligence to control the direction of the curtain track or blinds swing, record the need for people to open and close the curtains, or automatically adjust the opening and closing degree of the curtains according to the degree of sunlight exposure. The applicability makes the shading and

ventilation correct. For example, foreign designers have developed intelligent partition curtains, and a mechanical arm is set on the partition curtain to sense, which can automatically adjust the opening and closing of the curtain according to the user's walking route.

(3) Function expansion

The functions of smart home products seem to be limited, and few designers cross this functional barrier. In addition to functions such as beauty and warmth, it should also make smart homes smarter. The functions of various household products have a certain degree of plasticity, which can follow the progress of the Internet and improve performance. Designers should observe the needs of users in their daily lives and add some new functions to smart home products without being constrained by inertial thinking. For example, smart bedding can add a detection function to detect the user's body temperature, breathing, and heart rate while resting, which increases the user's health. Through such innovations, smart homes can add more convenience to users' lives, and constantly expand various functions of smart homes.

Conclusion: In summary, the design and innovation of smart homes in the context of the Internet era are of great significance. When designing a smart home, you must discover the defects and deficiencies in the design process, follow the principles of reliability, convenience, practicality, standardization, and advanced, innovate the appearance of the smart home, continuously improve the functions of the smart home, and The functions are expanded accordingly so that the smart home can better serve users.

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