

# Research on the Development of Modern Interior Decoration Design Based on Smart Home Concept

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**Abstract:** In modern interior design, we should pay attention to the people-oriented design concept and use high-tech technology and energy-saving and environmental-friendly materials to meet people's needs and promote the development of modern interior decoration design. Through the collection and in-depth analysis of consumer data, smart home enterprises promote the docking with third-party service providers and provide consumers with personalized offline services, which breaks the traditional profit model. This paper expounds the concept of smart home, and on this basis, analyzes the relevant points in modern interior decoration design under the concept of smart home, mainly from the aspects of interior furniture design, color design and lighting design. From the perspective of consumer experience, the future development trend of modern interior decoration design is analyzed for reference of related research.

## 1. Introduction

With the continuous improvement of intelligent technology, people have achieved intelligent living goals in their lives. What we call smart home is also called smart residence. Future smart home products will be equipped with corresponding smart home service system scenarios, collecting user experience data from daily life scenarios, thus providing accurate personalized services and continuously improving people's quality of life[1].

Today's interior design is a unique science that combines art and technology. Interior design embodies not only practical material existence, but also living environmental art with artistic appreciation value and personality temperament[2]. In modern interior design, we should pay attention to the people-oriented design concept and use high-tech technology and energy-saving and environmental-friendly materials to meet people's needs and promote the development of modern interior decoration design. With the advent of the 5G era, the information technology of the Internet of Things and artificial intelligence control technology have been continuously improved, providing a powerful power source for the development of smart homes.

## 2. Smart Home System

With the improvement of people's living standards and the development of electronic and information technology, the word "smart home", which received much attention more than ten years ago, has quietly become a hot topic in recent years. Through the collection and in-depth analysis of consumer data, smart home enterprises promote the docking with third-party service providers and provide personalized offline services for consumers, which breaks the traditional profit model[3-4]. At present, from the perspective of technology and standards, the time is ripe for the development of smart home based on network, and it also has great potential in the development prospect in the market. Using wireless technology can save cost, shorten design cycle, facilitate maintenance and adapt to the current development form.

Residential building is a platform for smart home application. Through the comprehensive application of computer information technology, integrated wiring technology and automation technology, automatic control of household appliances, automatic prevention of home safety,

automatic alarm and automatic help can be realized. The system can make users feel safe and comfortable while reducing the energy consumption of home life[5], as shown in Figure 1.

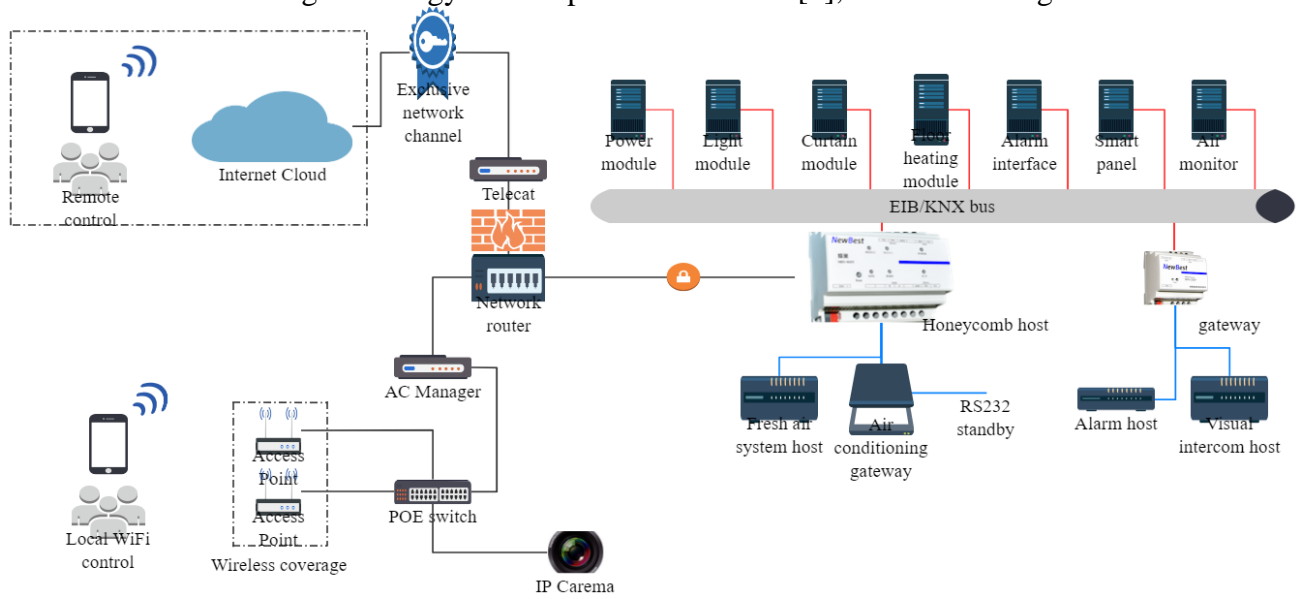


Fig.1 Smart Home System

Cameras, smoke detectors, door and window sensors, infrared detectors, water immersion detectors, alarm buttons, etc. are in the armed state. Once there are illegal intrusions, air leakage, high temperature and other abnormal situations in the home, the system will respond immediately and send the alarm to the owner or property security by calling.

Through smart phones, smart touch panels or smart terminals, centralized control and management of household appliances such as air conditioners and water heaters, as well as gas valves, background music, central air conditioners, floor heating and other equipment can be realized; Intelligent audio-visual system can centrally control and manage audio, projector, air conditioner, lighting and curtains, and realize one-button switching of various scenes.

### 3. Modern Interior Decoration Design Method Based on Smart Home Concept

In order to understand residents' views on smart home, we conducted field research in communities with high concentration of target consumers. The survey is based on people's cognition of smart home, and understands the preferences of national consumers, so as to guide the production and sales of enterprises. 300 questionnaires were filled online, and 270 questionnaires were valid. Figure 2 shows the proportion of consumers' demand for smart home products.

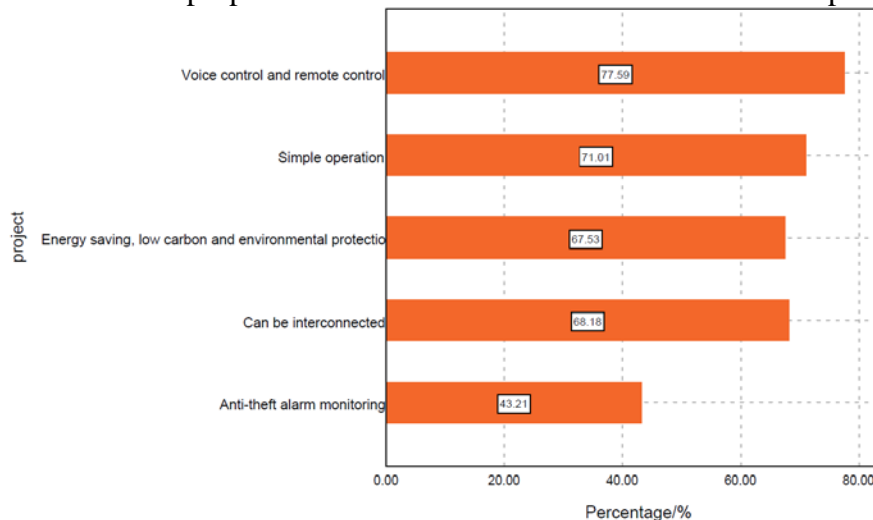


Fig.2 Proportion of Consumers' Functional Demand for Smart Home Products

The consumption demand of smart home products is mainly reflected in product interconnection, simple operation, voice and remote control, energy saving and environmental protection, anti-theft alarm monitoring management and so on. For ordinary consumers, the most important function is simple and easy to use. However, at present, most of the research on the structural design of smart home system in China's market has not been integrated and humanized. Many consumers do not know how to use smart home products after purchasing them, and still do not master all the functions of related products.

### **3.1 Interior Tone Design**

Color is one of the elements in interior design. People will have different feelings when facing different colors. Therefore, in the intelligent interior design, we should combine the indoor use environment and use colors flexibly according to different colors and compositions[6-7]. In the design of indoor color picking scheme, we should proceed from the static and dynamic color, take the subjective cognition and emotion of the viewer as the design conditions, and design a complete barrier-free color scheme. In the sense of color, we should consider people's mood, the warmth and coldness of color, the distance of space, the taste of the viewer and so on to find the corresponding sense of color.

Indoor color not only affects the visual environment, but also directly affects people's mood and psychology. Scientific color selection is beneficial to work and health[8]. Proper color processing can not only meet the functional requirements but also achieve beautiful results. In addition to observing the general color rules, indoor colors are different with the changes of aesthetic standards of the times. Therefore, in the process of designing indoor color scheme, it is necessary to take the static and dynamic color as the starting point, and determine the design conditions as people's subjective cognition and emotion to ensure that the designed color scheme is more complete.

### **3.2 Interior Lighting Design**

People not only require reasonable lighting to meet the needs of various activities, but also require lamps to have better artistic decoration effect. Timing function, which can perform timing function on indoor and outdoor lighting systems. While saving energy in control mode, we can also feel the humanization of home lighting system. Humans love the beautiful scenery of nature, and often introduce sunlight directly into the room to eliminate the darkness and closeness of the room, especially the top light and soft scattered light, making the indoor space more intimate and natural. The change of light and shadow makes the room more colorful and gives people a variety of feelings[9]. A variety of control functions, through the intelligent lighting system, you can sit on the sofa or lie on the bed and control all the lamps in your home with the remote control, without having to move back and forth upstairs and downstairs, east room and west room in order to turn off a certain lamp.

Intelligent home can realize the automatic collection, analysis and detection of indoor temperature, humidity, illumination and other data, strengthen the adjustment and control of indoor environment, ensure that the indoor environment is always in an ideal state, and then create a more ideal life experience for residents. In order to better provide indoor lighting and sunshine conditions, veranda architecture layout is often adopted, but it often brings monotonous visual sense, which is not conducive to the health needs of the elderly. In the design, we can try to enlarge the local space, form the transition space from outdoor to indoor, and turn the veranda space into a shared interactive place for communication activities, which will greatly enhance the entertainment activities of the elderly at this level and even at all levels and enrich their emotional communication.

### **3.3 Interior Furniture Design**

In the process of designing indoor furniture, while considering its use function, the design concept and connotation should also be fully reflected[10]. In furniture design, it is necessary to analyze the needs of different age groups, and the focus of furniture design will be different, so the design work should be carried out in combination with actual needs. As a design staff, we should

practice the basic principle of people-oriented and ensure that the designed works are more humanized. In the design of indoor furniture, we should not only consider the use function, but also express the designer's thoughts and connotations through the image design of furniture.

In the process of smart home design, designers should meet the basic needs of special people. For the elderly, designers can design mattresses with real-time monitoring of body temperature, pulse and blood pressure during sleep, and if there is any abnormality, they can give an alarm in time. In different places, the requirements of intelligent control are also different, such as apartments, office buildings and large shopping malls. According to the actual construction needs, primary design or advanced design can be adopted. It is necessary to fully consider the above factors in the design. Only in this way can we design a living environment that meets the requirements of residents and continuously expand the development space of intelligent home design.

#### **4. Development Trend of Modern Interior Decoration Design**

##### **4.1 Use a Lot of High Technology**

The market of smart homes can not be separated from the development of high technology, and the diversification of technology makes smart homes diversified. Smart homes that emerge through high technology make smarter choices in people's ventilation, lighting and relative humidity. Nowadays, green energy-saving houses are built on the basis of harmonious coexistence between man and nature and efficient use of energy.

Smart home system can ensure the correct operation of energy-saving equipment in the operation stage of the building, and make full use of renewable energy in nature to save energy such as gas, electricity and water. In the transitional season, smart home system can further promote residential energy saving, automatically adjust the opening and closing of windows according to indoor and outdoor temperature and humidity, open windows for natural ventilation when it is cool outdoors, and make full use of natural cold sources to realize free cooling.

##### **4.2 Design Highlights Green Nature**

With the growing awareness of environmental protection, people yearn for nature, natural drinks and natural materials, and are eager to live in a natural green environment. Create an idyllic and comfortable atmosphere in the house, emphasize the application of natural colors and natural materials, and adopt many folk art techniques and styles. On this basis, designers are constantly working hard to "return to nature", creating new texture effects and using concrete and abstract design techniques to make people associate with nature. In the future, smart homes will also pay more attention to environmental protection in interior design. Different monitoring and inspection equipment will be used to monitor and manage the water, electricity, air and sunshine of the family, so as to reduce the unconscious waste and realize energy conservation and environmental protection.

##### **4.3 Pursuing Individuality and Diversity**

In order to break the identity, people pursue individuality. Personality is the most important thing in family decoration. However, the decoration of many families is very similar. Seeing that others package door and window covers themselves, the result is the same. There are many similar things, and people are getting tired of this featureless decoration, so people pay attention to the personalized things.

Designers' collection of daily life materials, absorption of various cultural attainments and feelings of various local conditions and customs will be poured into their own design works to a certain extent. The size of space, the coordination and contrast of colors, and the smoothness of lines; The choice and change of materials contain and express the designer's emotion and creativity. Interior design reflects relaxed, concise, unique, romantic and novel interest and deep, simple and decent and pioneering consciousness, which embodies a unique and youthful trend and is a

manifestation of fashion and individuality in the development and change of interior design.

## 5. Conclusions

Today's interior design is a unique science that combines art and technology. Interior design embodies not only practical material existence, but also living environmental artworks with artistic appreciation value and personality temperament. At present, from the perspective of technology and standards, the time is ripe for the development of smart home based on network, and it also has great potential in the development prospect in the market. With the advent of the information age, more and more scientific and technological means have been applied to buildings. Various types of intelligent buildings have quietly emerged in China, providing a comfortable and convenient life for human beings, so it is very necessary to further strengthen the research on them. Modern interior decoration industry will definitely move towards standardization, and eventually there will be a good development environment.

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