Highlights in Art and Design
ISSN: 2957-8787 | Vol. 3, No. 3, 2023

Smart Home Design in the Context of the Development of Artificial Intelligence

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Abstract: Smart home design in the context of the development of artificial intelligence has great significance and potential. It can not only improve our lifestyle and quality of life, but also promote energy conservation and sustainable development. But in the actual operation, we are faced with interoperability and standardization. The balance between cost and convenience as well as adaptability of an aging society and other difficult problems. In order to solve these problems, smart home design can actively apply strategies such as data-driven personalized experience, intelligent control of human-computer interaction, and integration of smart home with other smart devices.

Keywords: Artificial Intelligence; Smart Home.

1. Forward

With the rapid development of artificial intelligence technology, smart home design has become a hot topic in the field of science and technology today. By connecting various smart devices and sensors, the smart home system can realize intelligent control and management, making the living space more intelligent, efficient and approve continuous. It can be seen that smart home design in the context of the development of artificial intelligence has great significance and potential. It can not only improve our lifestyle and quality of life, but also promote energy conservation and sustainable development. In the future, with the continuous progress of technology and the continuous evolution of user needs, smart home design will continue to innovate and develop to create a more intelligent, efficient and comfortable living environment for people.

2. Smart Home Design Problems in the Context of the Development of Artificial Intelligence

(1) Interoperability and standardization

Interoperability and standardization are important problems faced by smart home design in the context of the development of artificial intelligence. In the smart home market, there are various smart devices and platforms, which often use different communication protocols and data formats. This leads to the problem of interoperability between devices, that is to say, they cannot connect and cooperate well with each other. Take for example users often need to switch and manage devices between different platforms, which brings inconvenience to users.

First users can control the light and temperature on one smartphone application, but need another application to control the security camera. In this case, the smart home system cannot provide integrated control and management, and users need to operate through multiple applications or interfaces. Some smart items (such as smart speakers) already have the function of listening and speaking, but in In the context of the development of artificial intelligence deep learning technology, smart home should move to a deeper level. Instead of simply listening to the orders given by people.

Secondly, interoperability also hinders the data between smart devices. Interaction and Share. Different devices use different data formats and communication protocols, making it impossible for them to exchange data directly. This limits the ability to integrate and work together between devices. For example, an intelligent lighting system may not be able to communicate directly with a smart speaker to synchronize light and music.

(2) The balance between cost and convenience

The value of smart home lies in providing a convenient and comfortable living environment, but it also faces the cost. Mull over. In the context of the development of artificial intelligence, the balance between cost and convenience of smart devices is an important problem for smart home design. Smart home systems involve many different technologies and devices, including sensors, controllers, communication modules, etc. The cost of these technologies and equipment directly affects the price and market acceptance of smart home products.

On the one hand, in order to achieve a highly convenient smart home experience, a large number of resources need to be invested in the research and development and production of advanced technology and equipment. For example, it is necessary to develop a smart home hub controller with complex functions and intelligent algorithms, as well as communication modules that are seamlessly integrated with various smart devices. The high R&D and manufacturing costs of these technologies may lead to the excessive price of end products, limiting the popularity and marketing of smart homes.

On the other hand, in order to improve the market competitiveness and user experience of products, smart home design needs to pay attention to convenience. Users expect to be able to control and manage smart home devices through simple operations or voice commands to achieve an intelligent lifestyle. If the smart home design is too complex or inconvenient, users may be confused or dissatisfied, thus losing interest in the product.

(3) Adaptability of an aging society

An aging society refers to the social phenomenon that the proportion of the elderly population in the population structure is gradually increasing, while the proportion of the young labor force is relatively decreasing. In this context,

smart home design faces challenges and opportunities to adapt to an aging society. Due to the reduction of event variables in the living environment, decrease in the degree of social communication, only living in the elderly the characteristics of activity habits will be manifested as single activity trajectory, monotonous activity category, etc. Long Over time, it will lead to the strengthening of their cognitive thinking., It is not conducive to physical and psychological health. The design of smart home adapted to the aging society needs to take into account the special needs and usage habits of the elderly to provide better convenience, comfort and security.

In terms of independent life and auxiliary functions, smart home can provide automation and auxiliary functions to help the elderly live a better independent life. For example, smart lights and curtains can automatically adjust brightness and switches, smart appliances can be controlled remotely, and smart home robots can provide daily help and services. In terms of user-friendliness and ease of use, the elderly may not be familiar with new technologies and devices, so smart home products need to pay attention to user-friendliness and ease of use. Simplify the interface design, adopt intuitive graphical interface and large font display, provide simple and clear operation guidelines, and facilitate the operation and control of the elderly.

3. Smart Home Design Strategy in the Context of the Development of Artificial Intelligence

(1) Data-driven personalized experience

Artificial intelligence technology can analyze and learn users' habits, preferences and behavior patterns, so as to provide a personalized smart home experience. By collecting and analyzing a large amount of data, the smart home can automatically adapt to the needs of users and provide services that are more in line with personal preferences and habits. For example, according to the user's wake-up time and rest habits, the smart home can automatically adjust the settings of alarm clocks, lights, curtains and other devices to provide a personalized experience that better meets the needs of users. In addition, artificial intelligence technology can also provide more intelligent energy management and energy-saving functions through data analysis and learning user behavior patterns. By collecting and monitoring household energy use, the smart home can automatically adjust the energy consumption of the device and provide an optimized energy utilization plan.

(2) Intelligent control of human-computer interaction

The goal of artificial intelligence is to make machines intelligent, and its long-term goal is to imitate human thinking. Maintenance activities and intellectual function, revealing the fundamental mechanism of human intelligence. This goal still has a long way to go. Not only because the current artificial intelligence technology is far from reaching the right level, but also because human beings The process of your own thinking activities and all kinds of little is known about the mechanism of intellectual behavior. In the smart home, the progress of voice recognition and natural language processing technology enables users to realize intelligent control of home equipment through simple voice commands. Without manual operation or use of mobile phone applications, users can talk directly to the smart home system, such as saying "turn on the light in the living room" or "turn off the curtains".

The smart home system will convert voice commands into executable operations through voice recognition technology and control related devices accordingly. In addition to voice control, smart home can also interact with users through dialogue. When users ask questions or requests, the smart home can understand and respond accordingly. For example, users can ask, "What's the weather like today?" or "play a light music", the smart home will analyze the user's intention through natural language processing technology, and make corresponding answers or actions.

(3) Integration of smart home and other smart devices

Artificial intelligence technology promotes the interconnection of home devices, and smart homes can integrate and work together with other smart devices. The intelligent control of smart home products is mainly achieved through the following ways: mobile phone control System, computer control, remote control, voice control, scene linkage, etc. Through mobile phones and computers home appliance control, lighting control, curtain control, telephone remote control, etc. make people's lives more comfortable. Convenience and safety. For example, when users leave the home, the smart home can automatically perform a series of operations through the linkage with the mobile phone to improve the security and energy efficiency of the home.

For example, when the user leaves home, the smart home can obtain the user's location information through the connection with the mobile phone, and automatically turn off the lights, lock the door and adjust the energy usage to avoid unnecessary energy waste. At the same time, the smart home can also send relevant information to the user's mobile phone, so that the user can understand the situation at home in real time. Users can easily and quickly control the smart home by opening the door lock, adjusting the temperature or turning on the light through the application on the smart watch. At the same time, the smart watch can also push the status information of the home device to the user, so that the user can keep abreast of the situation at home and ensure the safety and convenience of the home.

4. Conclusion

Smart home design in the context of the development of artificial intelligence has great significance and potential. It can not only improve our lifestyle and quality of life, but also promote energy conservation and sustainable development. But in practice during the operation, faced with interoperability and standardization. The balance between cost and convenience as well as adaptability of an aging society and other difficult problems. In the context of the development of artificial intelligence, smart home design can actively apply strategies such as data-driven personalized experience, intelligent control of human-computer interaction, and integration of smart home with other smart devices. These strategies can improve the intelligence, convenience and comfort of smart homes, and create a smarter, more efficient and pleasant life experience for users.

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