Retraction

Retraction: Research on User Experience Design of Smart Home Products Based on Internet of Things (J. Phys.: Conf. Ser. 2074 012063)

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The authors of the article have been given opportunity to present evidence that they were the original and genuine creators of the work, however at the time of publication of this notice, IOP Publishing has not received any response. IOP Publishing has analysed the article and agrees there are enough indicators to cause serious doubts over the legitimacy of the work and agree this article should be retracted. The authors are encouraged to contact IOP Publishing Limited if they have any comments on this retraction.

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Research on User Experience Design of Smart Home Products Based on Internet of Things

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Abstract. With the continuous amelioration of people's living standards, people's expectations for the experience of the home environment are also increasing. Using the Internet of things to carry out user experience design of smart home products can bring people more interactive experience and services. Based on this, this paper first analyses the concept and value of smart home products, then studies the experience design of smart home products based on the Internet of things, and finally gives the experience design strategy of smart home products based on the Internet of things.

Keywords: User Experience, Smart Home Products, IOT

1. Introduction
With the iterative progress and maturity of social economy, it has obtained extensive and in-depth research and popularization in many fields, especially the utilization of modern intelligent tech represented by the IOT in the field of user experience design of home products, which greatly accelerates the innovation and development of smart home products [1]. The IOT not only accelerates the intelligent networking of home equipment, but also accelerates the intelligent home service. IOT will be a variety of intelligent home devices networking, build an integrated intelligent device network, can significantly ameliorate the use experience of related devices. The user experience design of smart home products is inevitably inseparable from the support and assistance of big data, IOT, AI, cloud computing and other technologies. Using these intelligent, integrated and networked technologies to carry out data collection and analysis, and accelerate the upgrading of intelligent user experience of home devices, has initially become the focus and hot spot of home industry research and attention.

At present, home products are mainly single point of intelligence, not able to establish an integrated device network, so it can be said that the current smart home is still in a relatively primary stage of development. The existing smart home products still have great room for amelioration in several aspects as shown in Figure 1 below, and the auxiliary utilization of IOT tech makes the vision of smart home gradually come true. Home intelligent product control terminal has gradually become an emerging market under the condition of Internet. On the other hand, with the continuous amelioration of people's living standards, people's expectations for the experience of the home environment are also increasing. Using the IOT to carry out the user experience design of smart home products can better protect the service of smart home and ameliorate the quality of people's home life.
In addition, the IOT tech is constantly improving people's living mode. The technologies such as character and gesture recognition, machine vision, gesture interaction, embedded emotionalization greatly expand the utilization scope of smart home, which not only facilitates people's life, but also significantly ameliorates people's quality of life [2]. By using the IOT, a variety of home sensors and microcontrollers are associated to achieve the integration of management and data sharing activities, and an intelligent and remote-controlled intelligent network is established. With the help of smart home, sensors and utilizations with dynamic heterogeneous architecture are established to create a safe, comfortable, energy-saving and environment-friendly intelligent atmosphere for people's home life.

In short, with the continuous active and mature smart home market, the IOT has brought new breakthroughs to the amelioration of user experience design of smart home products. Using big data and the IOT can dig out the real needs of users and realize the design innovation of smart home products. Therefore, the research on user experience design of smart home products based on IOT has important practical value.

![Potential amelioration of smart home products](image)

**Figure 1.** Potential amelioration of smart home products

2. The concept and value of smart home products

2.1. Concept and advantages of smart home

The rise and development of smart home is based on the continuous amelioration of people's living standard and income level [3]. Whether it is the demand for home comfort, the demand for home office or the demand for diversity and security of spare time life, all accelerate the development of smart home. The utilization of smart home can establish digital home environment info, realize efficient home equipment management, provide intelligent and reliable security warning and bring diversified home life experience. Smart home can enrich people's spare time life, provide more flexible and reliable home office solutions, and establish a more comfortable and warm home environment.

2.2. Function and value of smart home

The home environment established by smart home is more comfortable and warm, providing more rich and diverse spare time life for choice, and establishing its office environment and safe and reliable security system. First of all, in the aspect of creating the home environment, smart home can monitor the home environment in real time and provide data services, and can provide home environment intelligent adjustment and artificial environment intervention services [4]. Secondly, at the level of home equipment management, it provides real-time control service and status info of equipment.

In the aspect of home safety, it provides real-time early warning services such as fire control, security, access control and monitoring. In addition, at the personalized scene configuration level, it can provide personalized configuration services of the system and provide intelligent / manual control switching. At the data platform service level, it provides historical data query and real-time monitoring services.
2.3. The functional analysis of smart home products

The use scenarios of smart home mainly include several schemes as shown in Figure 2 below, so its functional analysis is mainly carried out around these levels. In the aspect of environmental monitoring, we should build an environmental monitoring system [5]. In the aspect of equipment management, we should realize the control of home electrical. In the aspect of access control and security, we should be able to realize the functions of video monitoring, access control management and security protection. Secondly, in the aspect of home environment adjustment, the threshold configuration system is constructed, and in the aspect of personalized scene setting, the remote scene mode is constructed. In addition, at the data service level, the function option module and history query record are constructed.

![Figure 2. Use scenarios of smart home products](image)

3. Experience design of smart home products based on IOT

3.1. Architecture and module of smart home system based on IOT

The functional modules of the smart home system based on the IOT mainly include the main control module, lighting control subsystem, anti-theft subsystem, network control module, etc. The overall framework of the whole system is shown in Figure 3 below. Among them, the main control module is responsible for subsystem info concentration, storage, and analysis and decision-making [6]. With the continuous amelioration of the main control module function and the continuous miniaturization of the volume, it can be more flexible and convenient applied to a variety of home scenes. With the help of network bus and various types of modules are connected, and the software program is used to execute control commands, to convey commands to the unit control module, to control various connected appliances.

![Figure 3. Architecture and module of smart home system](image)

Secondly, the security control subsystem of smart home is mainly for effective prevention and early warning of the factors causing security problems [7]. In addition, the key of network control module is to realize the sending and receiving of SMS, collection, analysis and processing of abnormal info of home products. The chip is embedded in the home equipment to achieve the acquisition and interaction of its status info.
3.2. Experiential design of smart home products based on IOT

The design of smart home products based on the IOT must first solve the interconnection and interworking problems of various household appliances with completely different structures and characteristics, so as to build a data sharing compatibility system [8]. Secondly, due to the small amount of info of home devices and products, but the demand for real-time is high, which requires the smart home system to adjust in time according to the real-time environment of the home. In addition, smart home products run in different environments, which require high anti-interference and stability of the system. In order to ameliorate the user experience, it needs to further optimize the operability of home products and unify the operation methods of related devices.

4. Selection strategy of smart home system equipment

4.1. Selection strategy of smart home system equipment

In order to ameliorate the user experience of smart home system, in the process of smart home system product selection, we should pay attention to the matching, availability, expansibility, security and maintainability of home product interface [9]. So as to ensure that the interface of smart home sensor devices can be better compatible with the system design interface, and will not cause adverse effects on the whole system when the home products are aging. Due to the continuous expansion of the functions of smart home products, the relevant sensor devices should also have high scalability to support the later upgrade and expansion of the system. In addition, the selection of smart home system products should also pay attention to the appropriate cost performance, so as to reduce the cost on the premise of meeting the demand and quality.

4.2. Design strategy of smart home system

Firstly, at the data processing level of smart home system, the smart cloud data service is obtained by configuring and calling relevant interfaces, and the data source is identified by parsing the key characters in the data package. Secondly, through the relevant network protocol and data channel definition, to achieve data query and device control. In addition, in the aspect of environment perception design of smart home system equipment, by collecting and summarizing the environment data collected by environment collection sensors, and displaying the data in front of users through UI design, it can provide real-time indoor environment data reference for users and provide data support for environment adjustment in smart home system. Electrical control system provides artificial control service for smart home system.

4.3. The realization of experience of smart home system based on IOT

Using the IOT to establish a signal transmission network, and build a remote control platform for data transmission. Secondly, the modular design idea is used to divide the function modules of smart home system [10]. The smart home system is divided into wireless receiving part, main control center part and control part. Through unlimited links between the parts, the switch control and intelligent processing of smart home can be realized. In addition, it provides real-time smart cloud data service for smart home system with the help of function option subsystem, and provides special home scene service for smart home system according to scene mode. Through the configuration of system mode and temporary scene, it can provide real-time home environment setting function for smart home system.

5. Conclusion

In summary, with the help of smart home, sensors and utilizations with dynamic heterogeneous architecture are established to create a safe, comfortable, energy-saving and environment-friendly intelligent atmosphere for people's home life. This paper analyzes the function and value of smart home by studying the concept and value of smart home products. Through the analysis of experience design of smart home products based on IOT, the architecture and modules of smart home system
based on IOT are studied. Through the research on the experiential design strategy of smart home products based on the IOT, the realization of experiential design of smart home system based on the IOT is analyzed.

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