

# Research on Smart Home Interior Design in Youth Living Space

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**Abstract:** Contemporary smart technology has come to an unprecedented height and has become a clear trend for the future development of society, especially for the living space of young people has a particularly important impact. The ability of young people to accept new things is higher than others, and they are willing to try new things, which makes them able to play their role of smart home products more perfectly. The youth group's concern for the update of smart home and the frequency of using smart home make the main sales target of smart home is the youth group. We need to further explore and study the needs and psychological activities of young people for smart home.

## 1 Preface

This paper explains the current situation and development trend of smart home applications, outlines the characteristics of smart home, explores the needs of youth groups for living space and the needs of smart home, and briefly summarizes the innovative design strategies of smart home in youth living space using the conclusions of these needs to promote the renewal and development of smart home.

## 2 Smart Home Application Status

The integration of smart home systems into the indoor environment makes people feel convenient and relaxed while using the space. In the daily life, smart home can provide people with convenient ways to do things, so that people can arrange their affairs in a scientific, reasonable and efficient way, making full use of time and resources.

### 2.1. More Data-driven Life

In the development process of smart home, it is necessary to design according to the living habits and preferences of the user population to efficiently and scientifically manage the products, so as to achieve the effective use of scientific intelligence. Smart home products can display multi-scene mode operation functions and implement personalized services. Smart home can also help people to improve the utilization of time, so as to get rid of the tedious things in the work.[1]

### 2.2. Safer Living

The emergence of smart home has raised the security system of living space to an unprecedented height, with its

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sophisticated anti-theft system and highly accurate outdoor monitoring system can further guarantee the safety of our daily life. As well as some control systems in the smart home to achieve full automatic switching technology, record some safety hazards at home, reduce the accident rate to a minimum standard in advance, to ensure that no major accidents occur at home.

## 3 Smart Home Development Trend

Smart home is a product of the contemporary era of big data, in this era of information data explosion, the rapid development of smart home has gradually become one of the focus of attention.[2] Smart home is a product of people in the process of improving the quality of life, in the pursuit of perfection in the process of high people's aesthetics and whether the smart home and the living space is highly integrated with the issue of in-depth discussion. In the future, the position of smart home in the interior design of living space is unshakeable.

### 3.1. Certain Degree of Foresight

The cycle time for modern interior design to release new products is getting shorter and shorter, and more new things are rapidly integrated into people's home life, and users' styles and habits of interior design are changing frequently. Smart home architecture design integrates sustainable design concepts into daily architectural design, so that the architectural design can meet the current development status and make the interior design inherit development in the long run.

### **3.2. Has the Effect of Enhancing the Quality of Housing**

Intelligent home system humanized to enhance the quality of modern life, people's high requirements for life, high convenience intelligent home can meet them. Modern new technology and new materials in the intelligent home system, and has a very broad market, its fundamental improvement of home life environment by the general public highly recognized.

### **3.3. With Some Personalization**

Personalized demand is a unique demand formed under the action of many different factors such as different psychology, thinking and living habits of each person, personalized demand reflects the level of human appreciation and aesthetic level, the polygon of smart home can reasonably and appropriately meet the personalized demand as much as possible. According to personal preferences for lighting, control and appearance adjustment and modification. Smart home further shows people's aesthetic interest and attitude towards life.

## **4 Youth Group Usage Needs**

Most of the contemporary young people's requirements for a good living space are hard requirements, mainly in terms of convenience and comfort, and its functions need to meet leisure and entertainment, rest and sleep, work and study, dining, washing and drying. [3]Moreover, most of the contemporary young people are working outside and living alone. The special characteristics of these lifestyles and some unique living habits make the demand for living space of these people not limited to basic functions. According to the above introduction of smart home combined with interior design theory, we briefly summarize the needs of young people for living space. From various angles, three major demands are derived.

### **4.1. Multi-dimensional Requirements**

The multidimensional theory of interior space aims to establish the relationship between the occupants themselves and the living environment, and on this basis, to achieve the satisfaction of the occupants' sensory experience, emotional needs, psychological effects, cognitive thinking and physical relationship to the living space, in order to achieve the coordination and balance of the living needs.

Sleeping space is a necessary functional space for young people's living space, due to the limited economic ability of young people, resulting in the limited overall area of living space, the need to meet their necessary sleeping space in the same living space and at the same time to meet, for example, recreation, work and study space. Therefore, the division of the whole space is particularly important, and the space needs to be reasonably divided and more finely adjusted. From multiple angles to meet the multi-dimensional needs of young people, reduce unnecessary home decoration, only

home implantation space, the most rational space, the most coordinated.

In addition to meeting the multi-dimensional needs of young people living alone through the reasonable arrangement of space and the use of smart homes, the visual experience can also affect their living experience. Color design in space involves expertise in psychology, color science, physics and other disciplines, and colors with different attributes have different effects on human vision and psychology. The choice of color in a space is very important and has a serious impact on the visual comfort of young people, the quality of sleep, the overall atmosphere of the space and so on. The use of blue environment can have a certain effect on slowing down the heart rate, which in turn makes young people stay calm and more relaxed, so they can have a better rest time. [4]If the color of the indoor space is not convenient to adjust and change, you can use intelligent lighting equipment, according to the space color needs, to create the atmosphere, to meet the multi-dimensional needs of the youth group for color.

### **4.2. Interactivity Requirements**

Interaction design was named in the 1980s by Bill Mogridge, the father of modern notebooks, who said "design is the interactive products that support people's daily work and life", and the importance of interaction design for a product can be clearly seen from Bill Mogridge's expression, especially for smart home products, where interaction design with people is particularly important. [5]In the youth group, the system data shows that most young people have a very strong demand for product interactivity. The reason for this is twofold: one is that the mental pressure and work pressure of the contemporary youth groups lead to the growth of negative emotions, which need to be vented in the living space; the other is that the youth groups mostly live alone, and inevitably lonely and isolated in the process, the interactivity of smart home can provide the most basic communication and interaction for these youth groups living alone. The interactive design of smart home is based on the behavior, senses and psychology of young people, striving for a more realistic interactive experience.

Nowadays, a variety of brands of smart home products control through voice commands, freely adjusting lights, music, air conditioning and a series of other products that require manual operation in traditional living spaces, strengthening the interaction experience of young people with the space in the living space. Smart control systems such as Tmall Genie and Xiao Ai classmates (Figure 1) can use wireless networks and Bluetooth connections to realize the intelligent ecosystem, turning the entire indoor living space into a fully interactive space, fully automated and comfortable to enjoy the space.



Fig. 1 Xiaomi AI Speaker

### 4.3. Belonging Needs

Young people have been studying, studying, and applying for jobs, and they cherish and work very hard for their jobs. It is expected that the creation of the indoor environment will enable the young people to return home after a busy day to unload their fatigue, remove the tedious operation process, effectively increase the feeling of living in the living space, and upgrade the happiness and sense of belonging of the young people back home.

For example, in the kitchen function space, through the rationalization of its flow, the time and steps of operation can be reduced and the cooking efficiency can be improved, so that more and more young people living alone are interested in cooking, gaining the happiness of enjoying food with their own hands, and developing a sense of belonging to the living space. The design of the functional space of the kitchen should take into account the size of the space, the interspersed form of different operation modules and the range of activities of the users in the space, and make a smooth and reasonable functional layout. [6-7] Young people are accustomed to maintaining a good figure, and some people have a fitness hobby, and do not require too much food, but only need to handle things simply, so a simple and clean smart kitchen is essential. In the process of using the kitchen space to obtain a sense of pleasure, the pursuit of the added value of the product.

## 5 Innovative Design Strategies for Smart Homes in Youth Living Spaces

Through the analysis and summary of the needs of the youth group described above, combined with the study of interior design of living space, we now outline some innovative design strategies of smart home in the youth living space, from the sleeping space, the need to include the sleeping space, living room space, kitchen space, bathroom four aspects to explain.

### 5.1. Sleeping Space

The most important thing in the whole living space is the sleeping space, one can work in a better condition only if one has enough sleep. Christopher Alexander mentioned in "The Language of Architectural Patterns" that one should not simply put a single bed in an empty room called a dormitory, but one wants to put a bed in a deep space, that is, one wants to be surrounded by something.

[8] Therefore, the placement of beds for youth groups must be careful. Create a safe and private space, can be relieved of the day's exertions during sleep time. To use the bed visit, combined with the rendering of light, the entire sleeping space should be created a warm, calm space, the use of sound-controlled light technology to embed the light in the wall seam, both beautiful and practical. The adjustable light can be changed reasonably and conveniently at the time of different needs. And the use of light to create a sense of the bed enclosed within, to ensure the quality of sleep. Reasonable use of intelligent means to create a comfortable home environment to relieve the body and mind.

### 5.2. Living Room Space

The living room space needs to be for leisure and entertainment, work and study, sports and fitness, etc. The youth group needs such a multi-functional space to relax and soothe their bodies and minds on weekends. In the limited space needs to rationalize the function, the use of intelligent LCD TV wall-mounted in the background wall, lightweight sofa seats can effectively ensure the versatility of the space. Because there is not a lot of time for indoor cleaning, intelligent sweeping home is essential. Depending on the person, the space can be personalized according to the frequency of various people using the space for various functions. If you are a student and workaholic, reduce the entertainment space, expand the study and work area, and place intelligent lifting tables and chairs to improve the structure of the space; if you are a self-publisher and fitness expert, you need a lot of space for activities, and an open sports area is essential (Figure 2). The variability of the space is incomparable to other controls, and the smart home ecosystem can be implanted into the space, using wireless screen casting and voice control to control any home in the space without having to stand up. [9] Smart curtains and clotheslines, using the Internet of Things system, can be switched on and off at regular intervals, so that everything in the house is ready before the occupants return home, waiting for their return.

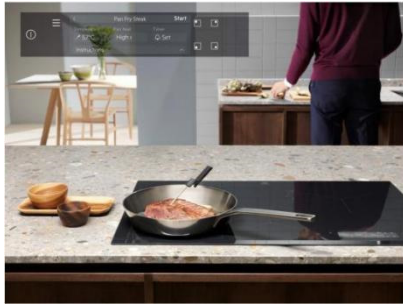


Fig. 2 Smart Living Room Activity Area

### 5.3. Kitchen space

Kitchen space needs to maximize the function in the smallest space, but also to ensure that its owner in the kitchen to play enough space must make changes in the operating table. The use of the "I" and "L" forms to connect the storage area, rinse area, operation area and

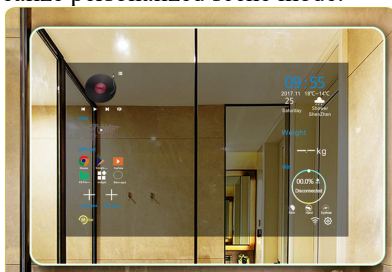
cooking area can make the entire space more fluid to ensure the convenience of the owner's operation (Figure 3). Young people of today are always concerned about their own health, market fitness to keep fit, so they are also very concerned about the control of diet, the main requirement for things is simple cooking, and do not need a lot of oil and salt frying, need to be air fryers, ovens and other quick heating smart products, and the use of smart products to calculate the intake of calories to keep fit while saving a lot of time. In daily life also need to take into account that no one at home for a long time, the need for intelligent alarm system connected to the cell phone, out of the home can also protect the home whether the gas is turned off and some other kitchen hazards.



**Fig. 3** Smart Cooking System

#### 5.4. Restrooms

The bathroom takes up a relatively small proportion of the entire living space, but it shows the aesthetic style of a home and the quality of life. Its available smart home in this out also highlights its multi-functional place. The use of smart mirrors is a common phenomenon in the living space of contemporary youth groups, which adopts the Android system and uses ZigBee, wireless network and Bluetooth connection to realize the interaction between people and mirrors, [10]surfacing real-time news, physical condition, weather of the day and other information on the mirror, so that youth groups can learn the information of the day during the morning wash (Figure 4). Through the smart home, the fragmented time can be used efficiently to improve the life and work efficiency of young people. In addition, the smart mirror panel can be changed by its owner to realize personalized scene mode.



**Fig. 4** Smart Mirror

## 6 Conclusion

The pressure of contemporary young people's life is unprecedented, and the pressure and frustration and fatigue they experience every day are also difficult to

relieve, so the comfort and happiness of living space is especially important. With the intervention of smart home, the traditional living space is updated to make it more comfortable and happy. People are constantly pursuing a high quality of life, in which the essential stage is to combine with modern high-tech means, big data, artificial intelligence technology and so on. Modern designers also need to pay attention to the smart home, the smart home better into the living space, to a comprehensive understanding of the smart home, balance the relationship between people and the smart home, in the human-centered design principles to achieve a better design.

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