

Emotional design pattern and development trend of intelligent clothing

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Abstract. In the rapid development of social economy and science and technology, in the face of increasingly high requirements of clothing design and manufacturing industry, some scholars put forward the concept of intelligent clothing in the research and innovation, and strengthen the innovation of technical personnel and application concept, in order to improve human living environment and working mode. Because the difficulty of intelligent clothing design is high, the study theory of the design model is not mature. At present, while making full use of various technical resources, the related content of intelligent clothing emotion design is summarized, and a perfect intelligent clothing design system is constructed based on the personality ideas put forward by consumers. On the basis of understanding the research status of intelligent clothing design, this paper deeply discusses the main development trends of intelligent clothing design in the future according to the structure of emotional design pattern, in order to provide technical basis for the development of clothing manufacturing in the new era.

Keywords: Intelligent clothing; Emotional design; Development trend; Design process; Effect evaluation.

1. Introduction

As a new application mode, intelligent clothing design has novel practical design concepts and high overall operation difficulty. Therefore, in the process of research, we always adhere to the customer-centric concept and integrate the customer concept into the whole design process to ensure the organic integration of modern technology and clothing design, in order to guide the fashion field to develop towards a new type of intelligent clothing. Some enterprises understand the different styles of intelligent clothing design through questionnaire survey, identify the clothing needs and consumption habits of different groups of customers, and thus complete design innovation to truly meet the basic needs of consumer groups. At the same time, during the period of intelligent clothing design, advanced technology means can be incorporated to reflect the humanized design concept and gradually innovate based on people's living standards, so as to truly realize the innovative development of intelligent clothing field. Based on the accumulated experience in recent years, intelligent clothing design attaches great importance to the concept of personalized design, always adheres to the personalized view, and its purpose is to meet the needs of social groups.[1-3]

For example, after the media Lab proposed wearable multimedia computer in the 1990s, scholars at home and abroad began to focus on the study of wearable technology and intelligent clothing. Some scholars believe that the design means and application mode of functional clothing can be used for reference to realize intelligent design with a long life cycle, make full use of the rich picture technology of the software system to clarify the problems in the development of intelligent clothing products, and draw the relationship model between users, technology and clothing as shown in Figure 1 below:

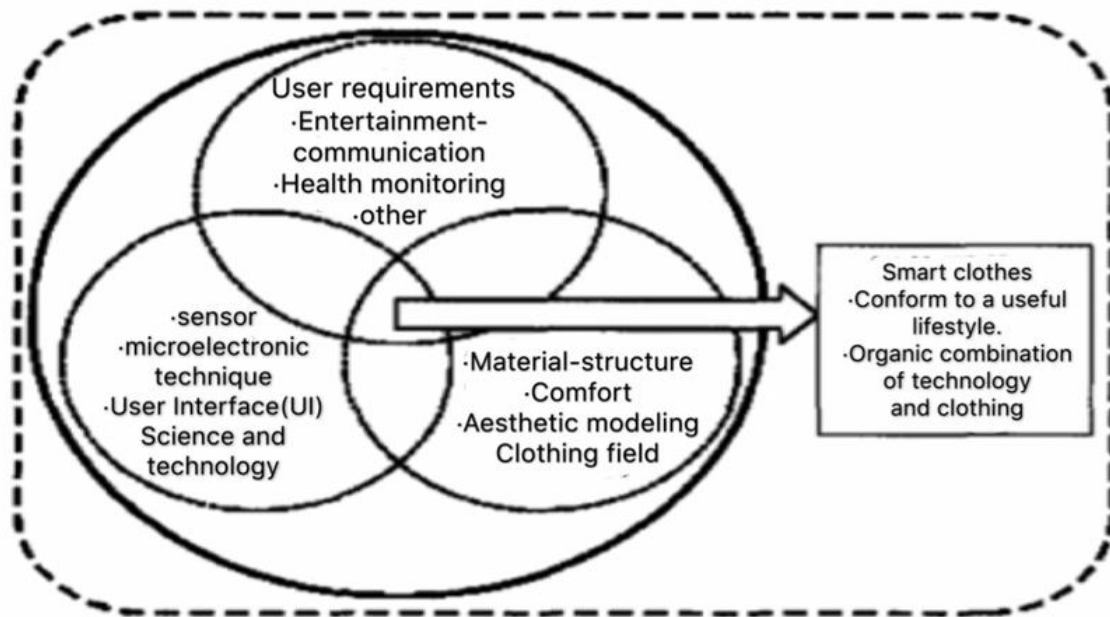


Figure 1. Model diagram of the relationship among users, technology and clothing

Some scholars began to widely use flexible technology in intelligent clothing. By embedding stainless steel in the fabric as an electronic system circuit, the main board, power supply and transmission module on the belt are connected with the shirt through the micro connector, and finally the basic data such as people's body temperature and electrocardiogram are transferred to the host computer. When studying the context-aware sensing coat, some scholars will add sensors into customized sports clothing, which mainly detect 11 limbs or rising motion angles, and finally transmit relevant data directly to the connected computer. When studying the intelligent clothing technology equipment for elderly walkers, some scholars regard smart phones and sensors as peripheral devices that process or store various data information through Bluetooth, and electronic displays can be effectively connected with smart phones to provide multiple functions such as displaying data or triggering the phone. Some scholars have also applied knitting technology to intelligent clothing fabric design, using different knitting techniques and clothing design techniques to change clothing pressure without affecting clothing function. At the same time, conductive yarn and ordinary yarn are mixed together to make clothing products have more functions in line with human needs, and the resulting clothing products can wrap the whole body and improve the aesthetic effect of intelligent clothing design.

Therefore, on the basis of understanding the research status of intelligent clothing design, this paper studies the future trend of intelligent clothing development in the future according to the common intelligent clothing emotional design pattern and technical process, in order to improve the current intelligent clothing design services and provide functions, and truly meet the needs of personalized clothing decoration.[4-6]

2. Method

2.1 Design Process

The research and development of intelligent clothing emotional design mainly starts from the fundamental needs of consumers. After integrating modern science and technology, it creates a modern clothing emotional design model with individual needs of consumers as the core. Finally, it obtains feedback information through cost test and consumer usage, and realizes product improvement based on it. According to the objects contained in the whole operation process, it can be divided into three steps, as shown in Figure 2 below:

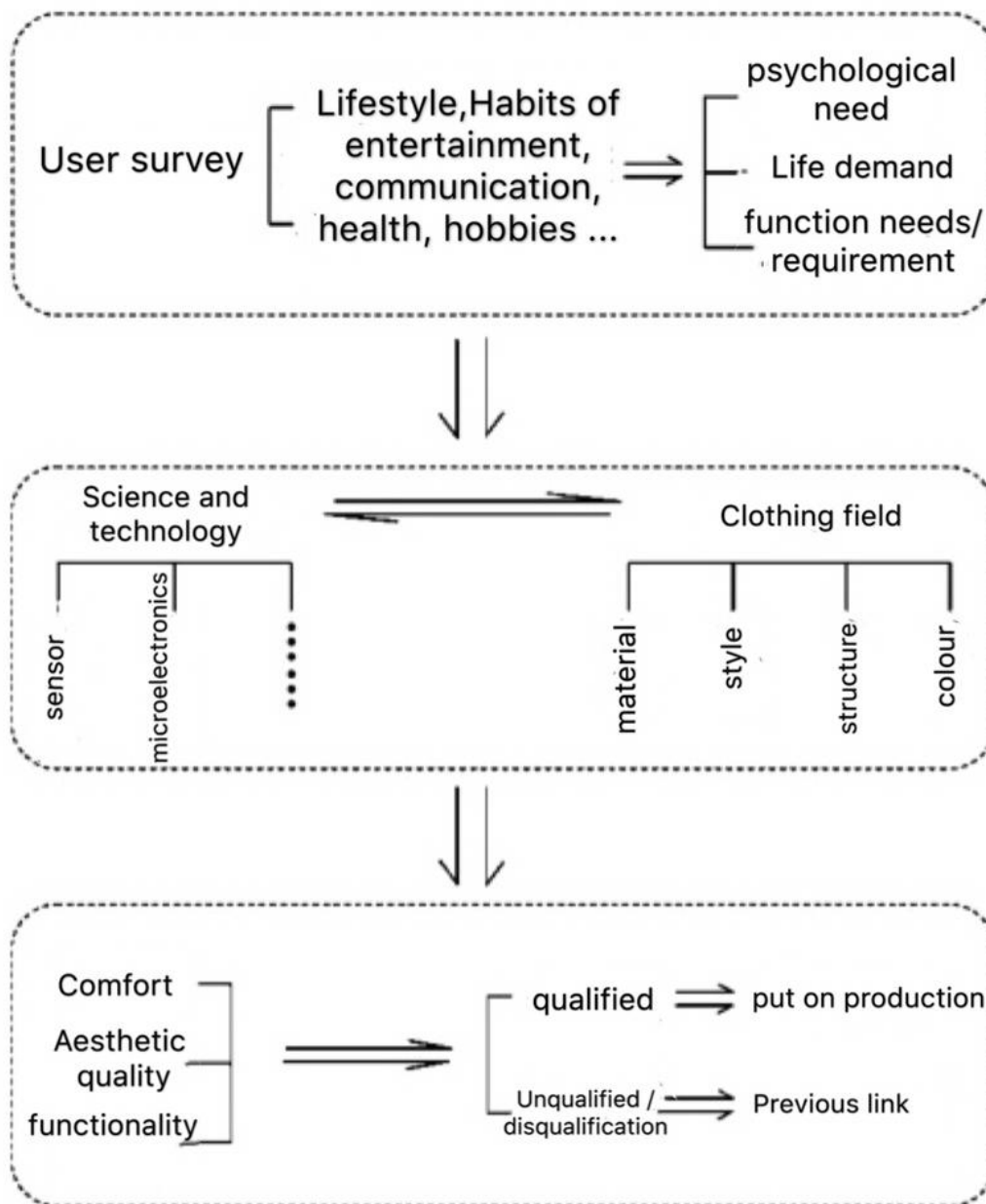


Figure 2. Flow chart of emotional design of clothing

First, product research. This part is the preparatory work for the emotional design of intelligent clothing. We should always adhere to the people-oriented design concept to investigate and analyze the use needs of consumer groups, and make clear the psychological requirements of consumer groups according to the final results, so as to clarify the design outline of intelligent clothing products. In essence, human text is the ultimate goal to meet users' essential needs in product design. During the emotional design of intelligent clothing, function and aesthetic are always interdependent, which is inconsistent with the conventional sense of clothing design. Emotional design of intelligent clothing pays more attention to intelligence and comfort, which needs to meet the use value and aesthetic value of consumer groups. Under the influence of age, living habits, aesthetic habits, history and culture and other factors, consumers have great differences when choosing smart clothing. Therefore, it is necessary to understand users' needs during emotional design, such as physiological needs such as comfort and functionality of clothing and psychological needs such as aesthetic value, price and brand value of clothing. This step is an important part of the overall design study. If the consumer needs are not fully understood before the emotional design, serious consequences are likely to occur during the design application.[7-9]

Second, product development. This link is the middle link of intelligent clothing emotional design, but also the core link of the overall operation. On the basis of product research, intelligent technology and clothing emotion should be integrated together. It is necessary to comprehensively consider whether the material, style, color and other elements of clothing are consistent with the needs of consumer groups. Compared with the requirements of ordinary clothing design, the emotional design of intelligent clothing will fully integrate electronic technology equipment and clothing technology, so as to achieve perfect integration without affecting the aesthetic needs and wearing comfort of clothing. Because intelligent clothing is put forward following the development of intelligent technology, it is greatly influenced by technology during the development and manufacturing. With the continuous improvement of modern science and technology, the characteristics of the large system and single function of intelligent clothing in the early stage are becoming more and more obvious. How to use modern technology to build high-quality intelligent clothing has become the core content of the industry. Only in this way will it not affect the aesthetic and comfort of clothing, and truly realize the optimization of design management.

And finally, feedback. The overall operation is the final content of the design process, but it does not mean the end of the whole process. It refers to the transformation of the whole design process. The specific structure is shown in Figure 3 below:

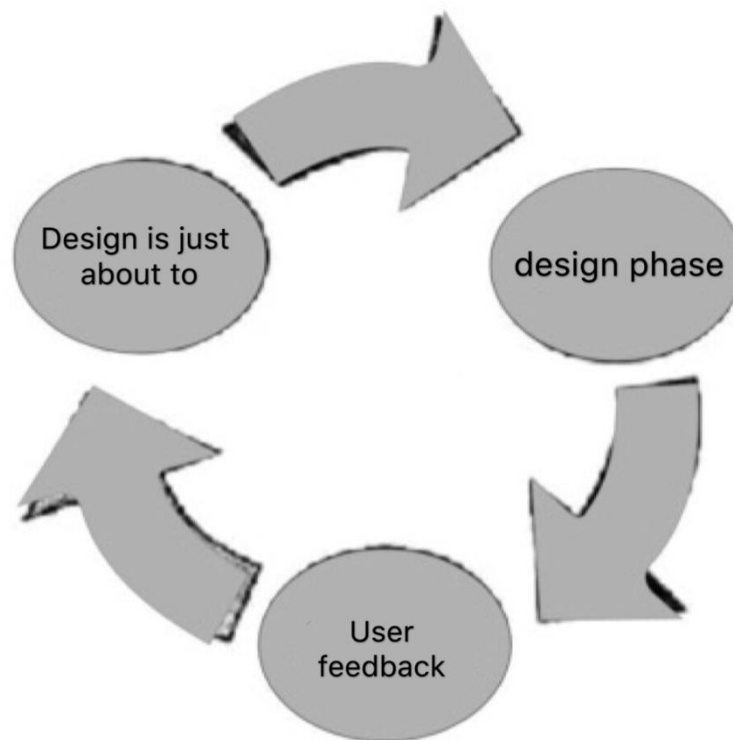


Figure 3. Feedback flow chart of fashion design

Based on the analysis of the figure above, it can be seen that the overall process is to find more defects and problems through users trying on clothing products. Designers can put forward effective solutions on the basis of finding reasons, so that the designed products can be put into production in large quantities, truly realize the optimization of the overall design, and make the designed products humanized and convenient. Fully embodies the people-oriented design concept.[10-11]

2.2 Effect evaluation and recycling

By constructing the evaluation model diagram of intelligent clothing as shown in FIG. 4 below, after integrating the accumulated experience of the current emotional design model of intelligent clothing, giving full consideration to the differential features of the functions of intelligent clothing

and selecting a variety of effect evaluation methods, it is easier to grasp the existing problems in the design research.

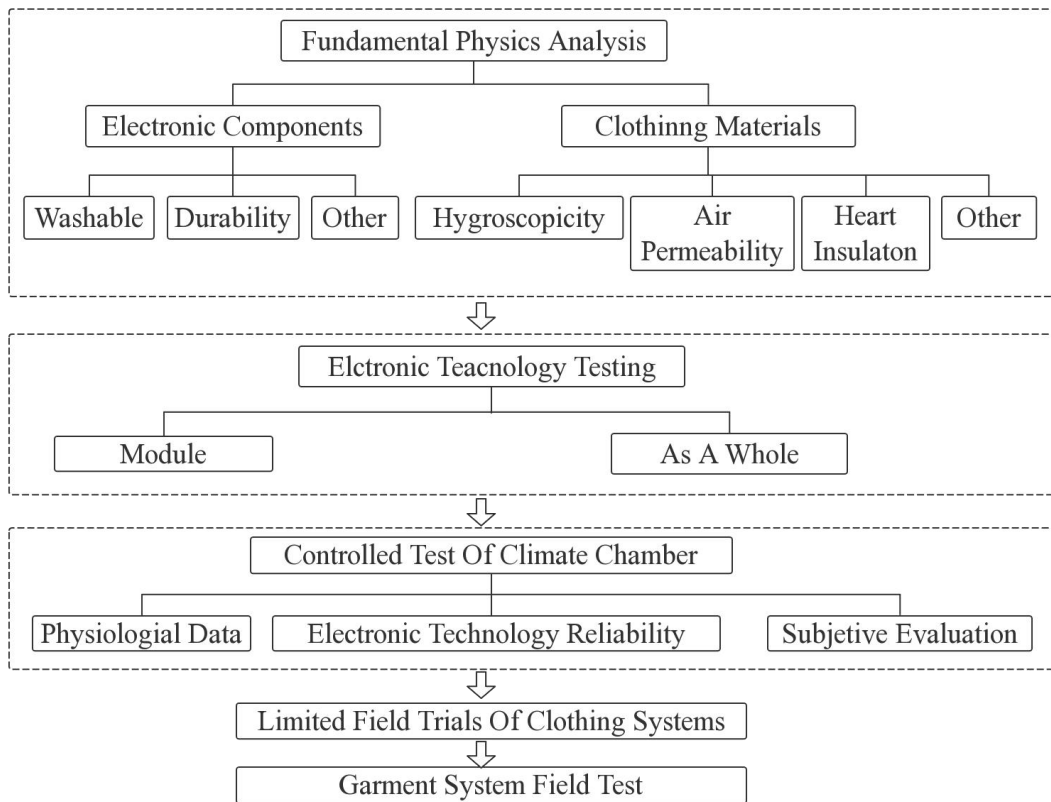


Figure 4. Smart clothing evaluation model

Based on the analysis of the figure above, it can be seen that this model is mainly tested and analyzed from five aspects: basic physics, electronic technology, controlled experiment of climate chamber, limited field test of clothing system and field test of clothing system. It should be noted that clothing manufacturing and processing will cause environmental pollution and material loss and other problems. Therefore, the emotional design model based on intelligent clothing will give full consideration to the basic principles of recycling. In the initial stage of design and research, it will give priority to the use of easily degradable or natural materials. As far as possible to reduce the negative impact of new products, recycling and use of relevant technical facilities.[12-15]

2.3 Design model

By integrating the above research and analysis, it can be seen that the emotional design process structure of intelligent clothing with information technology and electronic technology as the core is shown in Figure 5 below:

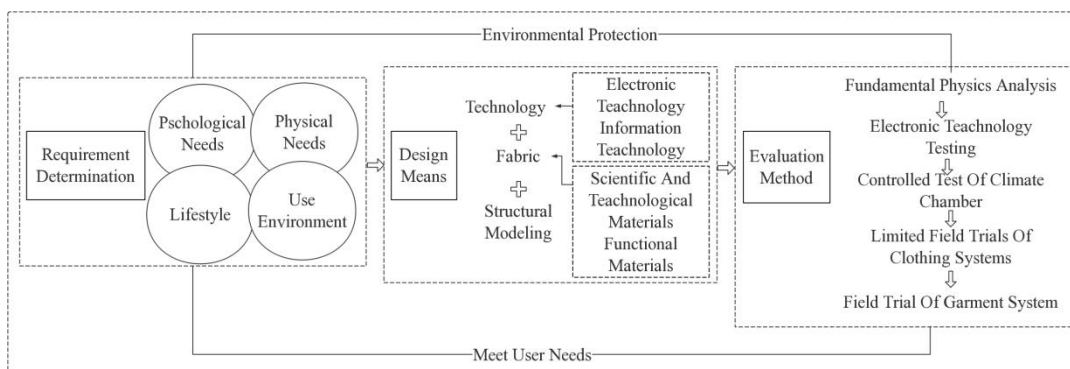


Figure 5 Emotional design structure of intelligent clothing

Based on the analysis of the figure above, it can be seen that the overall operation design is as follows: First, the basic needs of consumer groups should be determined strictly in accordance with the basic principle of user-centered, so as to truly meet the life mode and use environment of users; Secondly, the software technology and high-quality fabrics that can realize the expected function are selected to construct the structural modeling with aesthetic effects. Thirdly, on the basis of developing and designing the prototype, the comprehensive performance evaluation is realized. Finally, in the design and development, always abide by the basic principles of environmental protection and meet the needs.

3. Result analysis

Intelligent clothing will incorporate rich technical theories into emotional design, which can not only guarantee the safety and comfort of intelligent clothing, but also lay a foundation for the research of intelligent clothing design in the new era. From the perspective of long-term development of intelligent clothing industry, the development trend of emotional design mode is mainly reflected in two aspects: On the one hand, the design concept of intelligent clothing design pays more attention to the development of new scientific and technological performance. It will not only meet the needs of customers, but also put forward more high-quality performance of clothing products, really get rid of the restrictions of traditional technical theories, and put forward clothing products that meet the needs of the personalized public. On the other hand, intelligent clothing design pays more attention to the use of electronic technology theory, will choose electronic technology software according to customer needs, avoid clothing products to cause harm to the human body, and comprehensively improve the quality of intelligent clothing design. In the continuous innovation and development of the industry, clothing design should be organically integrated with electronic technology. Designers should pay full attention to the development and innovation of clothing products, and actively promote the rapid development of intelligent clothing while realizing the development goal of interactive design. Therefore, in the face of the rising emotional requirements of intelligent clothing design, clothing enterprises should strengthen technological innovation while actively cultivating more excellent technical talents, learn from domestic and foreign advanced intelligent clothing emotional design concepts and application technology, only in this way can improve the quality and efficiency of intelligent clothing design, and provide quality products and services for social residents.

Conclusion

To sum up, the development of intelligent clothing design in the future should incorporate more technical theories, dig deeply the requirements of clothing design put forward by people, and give full consideration to the long-term development goals of industry innovation. At the same time, on the basis of integrating science and technology and advanced theories, it is necessary to fully consider the individual differences of consumer groups, pay attention to integrating modern theories and influencing factors of fashion design, and improve the content of intelligent fashion design from multiple perspectives, so as to get the recognition and support of consumer groups. In the organic integration of intelligent clothing and electronic technology, our intelligent clothing research and development and technical innovation has achieved excellent results, which provides the foundation for the realization of the long-term development of intelligent clothing.

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