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Research on the intelligent security clothing design method for the Internet

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Abstract. In the development of modern economic construction, the intelligent technological means of clothing design has become the core topic discussed by manufacturing enterprises. Although the main trend and related problems of the design mode are still fuzzy, with the continuous improvement of science and technology level, the clothing design with network technological means as the core has become the focus of the manufacturing industry, which can not only simulate the perception of life system, A dual feedback mechanism with clothing sensing technology as the core can also be constructed. Therefore, on the basis of understanding the research status of Internet-based intelligent safety clothing design technology, this paper mainly studies the application effect of intelligent safety clothing design method in the new era according to the structure and application of intelligent safety clothing design, in order to provide technical basis for the innovation and development of clothing manufacturing industry in the new era.

Keywords: Internet; Intelligent; Clothing design; Demand analysis; Style design.

1. Introducion

In the rapid development of social economy and science and technology, intelligent fashion design takes modern science and technology as the basis. On the basis of meeting residents' needs for clothing, it mainly discusses the organic integration of science and technology and fashion design. From the perspective of overall development, intelligent clothing design should always adhere to the fundamental needs of consumers and balance clothing design and intelligent technology. When studying snow rescue clothing, some scholars proposed that electronic components and clothing aesthetics should be integrated to meet the application needs of polar cold conditions, so as to ensure that the clothing has multiple services such as user positioning and health monitoring. Some scholars have also used decision trees to study the needs of intelligent clothing design. The specific work is reflected in two aspects: on the one hand, it should meet the wearing needs, such as comfort, air permeability, safety, etc.; on the other hand, it should meet the operational needs of users and conform to the operating rules of various activities under different scenarios. Nowadays, the application technology and design concept of intelligent clothing in China are consistent. Therefore, from the perspective of long-term development, the key lies in the use of new technology to meet the goal of intelligent safe clothing design.[1-4]

It can be seen that the technical means and specific manifestations of intelligent clothing design are mainly reflected in the following points: First, flexible design. This design is mainly used in the field of biomedicine, can add electronic system lines in the fabric, and shirts, belts and other clothing together constitute a communication system and microelectronics receiving system. For example, on the basis of integrating various fabrics and sensors, some scholars use computer technology platforms to realize information storage and effective interaction. The most representative examples are intelligent clothing for snow rescue, internal installation of electronic intelligent system and GPS positioning system, so that users can obtain polar meteorological information according to their needs, and facilitate the transmission of their location to others. Secondly, intelligent clothing fabric design. According to the development history of intelligent clothing, intelligent fabric design is very important to improve the comfort of clothing. For example, in the design of intelligent clothing for snow rescue, knitting technology will be applied in underwear, vests, pants and other aspects, combined with phase change materials to adjust body temperature and comfort, and the coat material should be made of polytetrafluoroethylene material

nylon cloth, which can not only improve the anti-destructive clothing, but also has strong moisture absorption and wear resistance. At the same time, the function of intelligent clothing design should also consider the design structure and aesthetic effect. For example, in military clothing, fabric layering technology is used to ensure that the memory material has the functions of guiding, quick drying and breathable, etc., to meet people's needs from the aspects of fabric design and application technology, and truly reflect the comfort of intelligent clothing. Finally, intelligent clothing modeling design. From the perspective of clothing modeling design, some scholars proposed to use knitting technology to design intelligent clothing with transcutaneous nerve electrical stimulation, so as to meet the treatment needs of medical intelligent clothing. The clothing modeling design is smaller than normal clothing, and can stimulate the acupoints of the human body by means of dangerous forward movement and narrow collar circumference. The use of manual methods during sewing can meet the patient's physical needs; Some scholars also put forward a comfortable jacket that meets the needs of characteristic activities when studying intelligent clothing with automatic heat protection function. Some scholars fully considered comfort, safety and production conditions when designing grassland firefighting clothing, so as to ensure coordinated operation of different positions of each movement node.[5-7]

In the context of the era of big data, intelligent safety clothing design can not only meet the basic use functions, but also consider the usability and comfort of the design from the overall effect and electronic modules. Because the electronic technology itself is characterized by complexity and diversity, when designing and promoting the intelligent clothing system, it is necessary to ensure that the system modules meet the expected requirements. Meanwhile, it is necessary to monitor the battery energy consumption of part of the clothing, and improve the stability of the user interface and wire. Integrating the accumulated experience of intelligent fashion design in recent years, the focus of future fashion design lies in technological innovation, among which the most critical is electronic engineering and material science, which can provide effective basis for intelligent fashion design. On the basis of understanding the accumulated experience of intelligent safety clothing design in the new era, we mainly discuss the Internet oriented intelligent safety clothing design system and operation structure, and from the perspective of long-term development for in-depth discussion, in order to accelerate the pace of innovation in the clothing manufacturing industry in the new era.

2. Methods

2.1 Design Principles

Internet oriented intelligent safety clothing design should strictly follow the basic principles of people-oriented and green safety. Only in this way can we provide quality products and services for the public. Specific principles are reflected in the following points: First, sustainability. The purpose of garment design and manufacturing is to solve the relationship between human and objects. In accordance with the design principle of sustainability, the ecological stability relationship between human and nature will be considered, and the whole process of garment design will not affect the ecological stability. For example, in the process of shape design, all design styles and development trends have unique longevity and forms. A style with a fixed form has no great changes in shape design, but it can continue the original style in complex and diversified clothing products. Second, zoning design. This principle refers to the use of points, lines and surfaces in accordance with the human body structure of a certain law of the clothing body for zoning design, in search of safety factors to solve the size and appearance, to ensure the smooth and soft clothing products. This design principle can guarantee the comfort and lightness of intelligent clothing design to a certain extent. Finally, human-computer interaction. Clothing design is regarded as an intelligent platform, in which software operation and hardware facilities are the basic media of clothing design. It is necessary to ensure effective interaction between intelligent and safe clothing design and human body on the basis of fully considering people's wearing needs.[8-9]

2.2 Design Analysis

Nowadays, intelligent clothing safety design pays more attention to the scientific application of materials and wires, and greatly ignores the functionality and fashion of clothing products. Therefore, this paper starts with consumers' multi-dimensional demands for intelligent security services, and mainly discusses common design contents:

First of all, style design. Intelligent clothing style design is mainly used to improve the acceptance of network technology and provide good wearing experience for social residents. Therefore, in the design of safe clothing style, we should keep up with the fashion trend on the basis of guaranteeing beauty and comfort. Nowadays, style design gives priority to the body shape and occasion, and enhances the appearance beauty on the basis of satisfying the ergonomics. Safety clothing design with network technology as the core belongs to a new category of clothing, style design will be based on the network component packaging material, to achieve local design, after the use of clothing function is clearly designed.

Secondly, color design. Color has a deep influence on human beings, which mainly affects people's feelings through sensory experience and psychological suggestion. When creating the color atmosphere of clothing, we should not only reasonably control the basic rules of color collocation, but also use the charm of imagination and association to enhance the visual effect and truly meet the needs of wearing.

Finally, industrial design. With network technology as the core of intelligent safety clothing design, the final effect should consider the processing technology of production enterprises to ensure the effective integration of components and clothing, otherwise it is difficult to ensure the safety of clothing product design.

2.3 Designing the System

The traditional clothing CAD design process and the intelligent clothing design process are compared, as shown in Figure 1 and Figure 2 below:

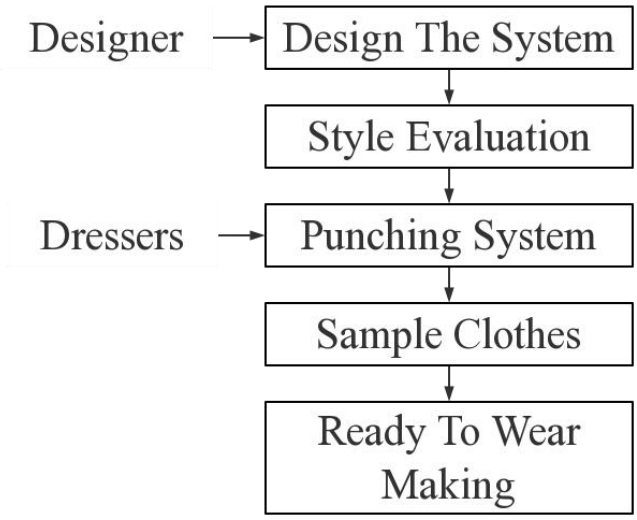

Figure 1 Traditional CAD design flow chart

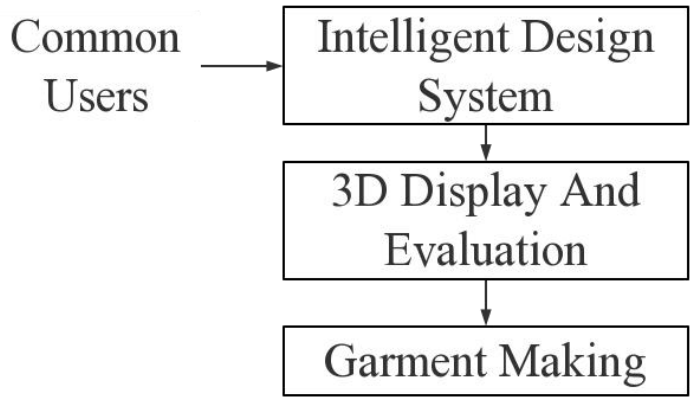

Figure 2 Flow chart of intelligent clothing design

Based on the analysis of the above figure, we can see that the traditional system mainly uses technical software to realize interactive design. After effective approval, 2D samples are produced by printing and clothing making. Intelligent clothing design is driven by intelligent design module operation, users can directly on the computer screen evaluation and modification, and finally complete the clothing design and manufacturing.

According to the analysis of the rapid development of Internet technology in recent years, it can be seen that the system architecture diagram as shown in Figure 3 below should be constructed. The overall system operation is oriented to non-professional users and supports the input of style design natural language description, so as to truly meet the life needs of the public.[10-11]

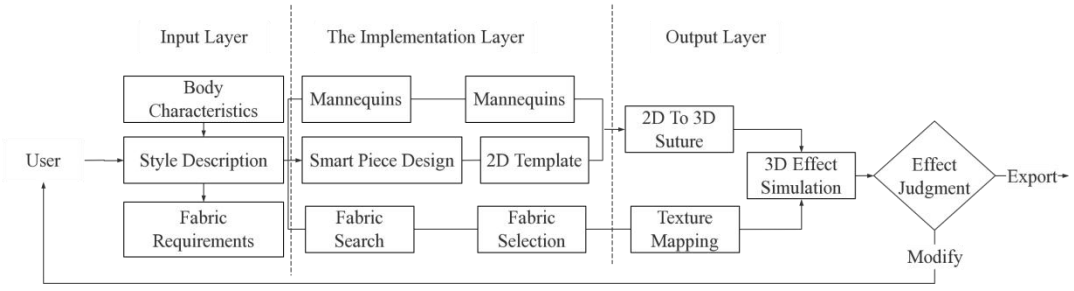

Figure 3 System architecture diagram

According to the analysis of the above figure, the overall design is divided into four parts. The first is the input layer, which includes three functions: body type, style description and fabric requirements. Secondly, it refers to the implementation layer, which needs to be combined with the three modules often provided by the input, involving human modeling, intelligent printing, fabric design and other functional services; Thirdly, it refers to the output layer, which is mainly used to output the three-dimensional effect of the design style worn by the mannequin. The specific research contents include garment fabric draping simulation, fabric texture mapping and many other contents. Finally, it refers to the effect judgment. During the operation of the whole system, if it meets the user's needs, it can complete the operation according to the overall design process. But if it does not meet the user's needs, it needs to readjust the design idea.

2.4 Key Technologies

Computer graphics, expert system, big data and other technologies should be used to complete intelligent generation for the overall system operation. The specific module design is shown in Figure 4 below:[12-15]

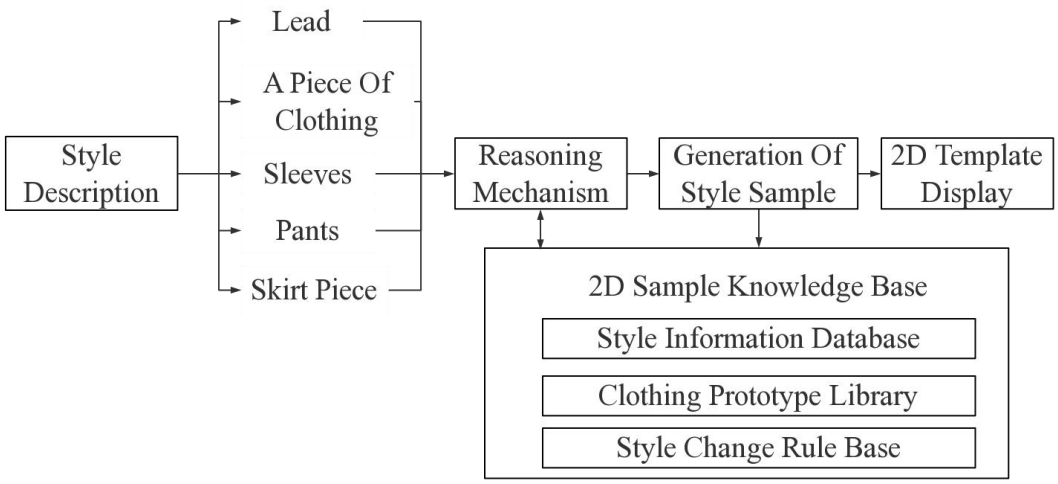

Figure 4 System module design structure diagram

Based on the analysis of the figure above, it can be seen that it mainly includes three contents: First, the user interface should be established to transform the wing description proposed by the user into design elements and specific parameters; Secondly, it is necessary to build an intelligent digital model according to a piece of sample prototype of different styles, specify the parameters to control the change of the sample, and establish the mapping relationship between the style design. Finally, the variation rules of different styles of templates are summarized, and 2D template knowledge base is built.

3. Result analysis

Facing the development trend of Internet technology, strengthening the intelligent safety clothing design research will not only show the unique advantages of clothing design in the new era, but also speed up the pace of innovation in our clothing manufacturing industry. Among them, the most representative is the design and application of collaborative information system in garment enterprises. Compared with traditional manufacturing design mode, the former has advantages as shown in Table 1 below:

Table 1 Comparison results between traditional manufacturing mode and manufacturing collaborative mode

Pattern type	Design mode	mode of production	sales mode	advantages and disadvantages	Customer participation in design	Inventory risk	pertinency	Design and manufacturing synergy
Traditional mass production	According to popular death	Large-scale mass production of single product	Offline (stores, shopping malls and other physical stores) agent	After the design, the production will find consumers, and the inventory is highly targeted and risky.	no	big	blurred	no

			and distributor mode					
Production based on network sales	Design sales according to market feedback and fashion trends.	Small batch, multi-category, fast and flexible production	Online (Tmall JD.COM, etc.) B2C mode	Looking for consumers online, feedback consumption information is timely, and the problem of copying money is serious.	hardly	less	Partially clear	less
Collaborative production of design and manufacturing	Personalized customization, crowdsourcing design, cloud design	Collaborative production of design and manufacturing, cloud manufacturing	Online and offline M2C or C2B mode	Consumers participate in design, design and manufacturing are coordinated, with zero inventory, good pertinence and high efficiency.	participate in	Nothing or small	explicit	Yes

Therefore, under the development trend of economic globalization, in the concept of intelligent clothing safety design, we will give priority to the development of modern science and technology. While meeting the needs of customers, we will master more intelligent and safety design concepts, and integrate more technical theories from the perspective of intelligence, break through the limitations of traditional thinking concepts, and truly reflect the application value of science and technology.

4. Conclusion

To sum up, in the future, Chinese scholars should continue to strengthen the technical research on clothing interaction and other aspects, reduce the harm caused by clothing design and manufacturing to the human body and natural environment by combining the theory of electronic technology, and obtain the public's recognition while improving the quality of intelligent clothing safety design, so as to promote the comprehensive development of the field of clothing design.

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