Research on the Application of Computer Embroidery Skills in Modern Chinese Fashion Design

Zugang Su¹*, Xiaohong Ouyang¹

¹Sichuan Engineering Technical College, Deyang, Sichuan, China, 618000

*Corresponding author e-mail: kyc@scetc.edu.cn

Abstract. Chinese traditional manual embroidery has a long history, which is one of the important intangible cultural heritage in China. However, with the increasing social demand for embroidery, the traditional manual embroidery production capacity is too small and the price is high, computer embroidery and embroidery technology has an important market. With the optimization of artificial intelligence algorithms such as deep learning, computer embroidery skills have been gradually optimized, which has replaced manual embroidery in some aspects. In the clothing industry, computer embroidery skills have been widely developed. Through computer technology, designers can carry out three-dimensional modeling design, which is not achieved by traditional plane decoration. Therefore, computer embroidery technology can be gradually applied to the behavior and social factors of modern society, which will encourage the inheritance of national costume culture. First of all, this paper analyzes the current computer embroidery design. Then, this paper analyzes the steps of computer embroidery. Finally, this paper puts forward the application of computer embroidery techniques in modern Chinese fashion design.

Keywords: Computer Embroidery Skills, Modern Chinese Clothing, Fashion Design

1. Introduction

Traditional embroidery needling is complex and changeable, which is an excellent intangible cultural heritage. However, the needling method of computer embroidery is more stylized, standardized and unified [1]. Computer embroidery is based on the traditional embroidery needle method and formed a unified standard of needle categories, mainly including single needle, manual single needle, jumper needle. At the same time, special computer embroidery can carry out a variety of other embroidery functions, such as patch embroidery, carving hole embroidery, Sequin embroidery, loose bead embroidery, etc [2-4]. Through modern art design thinking, computer embroidery can embody many matching principles of art design theory in the application of needling, including point, line, surface, etc. Through proper needling and operation mode, computer embroidery can show the beauty of form, which can help us to set and adjust the needling method [5-6]. For a garment with definite function, there are various forms of clothing, which can embody the charm of various styles by stamping, cutting and printing embroidery techniques [7].
2. Computer embroidery design

2.1. Classification of computer embroidery patterns
Embroidery patterns can be divided into two categories: concrete patterns and abstract patterns, as shown in Figure 1. Among the concrete patterns and abstract patterns, embroidery patterns occupy a prominent position.

![Figure 1. Classification of computer embroidery patterns.](image)

2.2. Composition of computer embroidery pattern
From the composition of embroidery patterns of ready-made clothes, the composition of computer-based embroidery is divided into two parts: single composition and overall composition. The composition of the pattern mainly includes four forms, including point, line, surface and synthesis. In the process of composition, designers can form different composition methods according to their design experience. Finally, through repeated experiments, embroidery patterns will achieve the most ideal composition form. The composition of computer embroidery pattern is shown in Figure 2.

![Figure 2. Composition of computer embroidery pattern.](image)

3. Computer embroidery process
As people pay more and more attention to traditional culture, intangible cultural heritage has become the focus of people's protection. In the 20th century, the industrial revolution in western countries changed embroidery from manual to mechanical. Therefore, embroidery is no longer a luxury, and has
gradually become popular among the people. Computer embroidery is to meet the needs of people's life, which can gradually replace the traditional embroidery. Therefore, computer embroidery has gradually become one of the means of clothing, home textile and other decorative means. Computer embroidery is divided into computer embroidery plate and computer embroidery machine, as shown in Figure 3.

4. Application of computer embroidery technology in modern Chinese fashion design

4.1. Home furnishing
With the diversification of the development of home clothing, home clothing is not only pajamas, which can be divided into indoor and outdoor. With the improvement of people's living standards, people's aesthetic demand for home clothing is also gradually improving. It's not just about home furnishings, but also about outdoor activities. Therefore, we need to pay more attention to the decorative design. The choice of patterns can be a natural element that is highly respected today, such as flowers, birds, fish and insects, as shown in Figure 4. This embroidered household clothing uses plum blossom to the waist, and then branches move to the chest. By exaggerating the size of the plum blossom, we can design a hierarchical relationship between the master and the secondary, which will be more in line with the principle of design aesthetics.

Figure 3. Computer embroidery process.

Figure 4. The outer decoration of household clothes.
4.2. The leisure clothes

For a long time, people have a great demand for leisure wear. Different leisure scenes need to wear casual clothes with different feelings, which also leads to a high rate of product replacement and elimination. At present, more and more popular plane cutting casual wear, the style does not fit the human body, embroidery patterns are applied to the back, and the color is light gray. The colors of casual wear are usually colorless black, white and gray, which easily highlights the embroidery design. At the same time, the area of embroidery should not be too large, which can be matched with the corresponding shoes, caps, glasses, etc. Through embroidery, clothing can give a free, comfortable and refreshing feeling, as shown in Figure 5.

![Figure 5. The leisure clothes.](image)

4.3. Traditional clothing

In the 22nd APEC meeting, APEC Chinese fashion design shows the traditional cultural elements of the Chinese nation, as shown in Figure 6. Through a large number of use of Chinese intangible cultural heritage such as Suzhou embroidery, the designer showed the traditional Chinese culture to the society. Whether it is a fresh and refined Narcissus, or twig peony and baoxianghua and other auspicious patterns, this has precipitated a strong Chinese friendship. Fashion design is not only the inheritance and promotion of the traditional culture of our nation, but also the innovation of Chinese traditional crafts driven by high and new technology.

![Figure 6. Traditional clothing.](image)

4.4. Ethnic costumes

Through ethnic patterns, ethnic minorities have integrated into their lifestyle, migration path, labor, war and so on. Through the abstraction, exaggeration and deformation of the subject, we can organize
them into cultural symbols that can express people's soul. The rich and colorful design is from simple and colorful life. The living habits and aesthetic concepts of residents in different regions are different, and the artistic style of clothing patterns is also different. The overall style of ethnic minority costumes is often free and unrestrained, as shown in Figure 7.

![Figure 7. Ethnic costumes.](image)

5. Conclusion
There are various forms of modern Chinese fashion design, which can be achieved by stamping, cutting, printing, embroidery and other technologies. Through computer embroidery skills, we can show the style charm of Chinese traditional culture to all nationalities around the world. Therefore, computer embroidery technology has been applied to the behavior and social factors of modern society, which will encourage the inheritance of national costume culture.

References
[1] Huang Xinmin, Meng Lingling, Zhou Ke. Application of computer embroidery in home textile design [J]. Shanghai textile technology, 2012 (11): 23-24.
[2] Ni Ming. Analysis of creative expression of modern embroidery design [J]. Grand stage, 2015 (10): 79-80.
[3] Qian Xuemei. A brief discussion on the artistic conception construction of embroidered bed products [J]. Friends of fine arts. 2008 (2): 49-54.
[4] Sun Fei, Xie Jun. research on computer embroidery pattern and needle technique expression technique [J]. Grand View of fine arts, 2008 (11): 218.
[5] Sun Fei, Xie Jun. research on computer embroidery pattern and needle technique expression techniques [J]. Grand View of fine arts. 2008, 17 (01): 7.
[6] Zhang Bingjia, Liu Xiaodong, Li Wenyan. Embroidery processing and new product development of textile fabrics [J]. Shanghai Textile Science and technology, 2009 (12): 42-43.
[7] Zhang pan, Liang Zhaohua. Comparison of artistic characteristics between traditional embroidery and computer embroidery [J]. Art and design. 2010, 32 (03): 70-73.