Innovative Development of Computer Digital Hand-Drawing Technology in the Process of Jewelry Design

Yuanyuan Kong*
Yunnan Land and Resources Vocational College, Kunming, Yunnan, China

*Corresponding author e-mail: kongyuanyuan@ynutxy.edu.cn

Abstract. Compared with the jewelry industry, traditional jewelry design can no longer be satisfied with the current fast-paced era. The emergence of computer digital hand-painting technology has opened up new horizons for jewelry design and production. We have brought about jewelry design in the computer age. Affected, the past traditional jewelry design has been new development. In jewelry design, the use of computer digital hand-painting technology allows designers to quickly and efficiently design the jewelry they want to design, and to grasp the emotions that the design inspiration needs to convey in time. The purpose of the research in this article is to analyze the use of computer digital hand-painting technology in the jewelry design process, and make innovative developments to traditional design methods. This article starts from the perspective of computer digital hand-painting technology, taking the current computer era as the background, and on the relevant realistic background and theoretical basis, to promote the innovation and development of jewelry design as the specific research object, and make full use of the current fast-developing computer digital hand-painting technology Make a breakthrough to innovate and develop the jewelry design process. The experimental results show that computer digital hand-painting technology can make a breakthrough in the process of traditional jewelry design and construct a new model of jewelry design.

Keywords: Jewelry Industry, Jewelry Design, Computer Digital Hand-Painting Technology, Innovation and Development

1. Introduction

Currently, computer technology is widely used, and an important branch in the development of computer technology, computer digital hand-painting technology occupies an important position [1]. Computer digital hand-painting technology is related to product design, animation, graphic design, website design, three-dimensional design and other fine arts. Majors with computer digital hand-painting technology application as the core are emerging in large numbers under the drive of social demand. Under normal circumstances, design majors will try a professional subject related to drawing after the college entrance examination [2]. At this time, hand-drawn sketching needs to be used, but because this part of the students are not necessarily art students, and they do not necessarily receive professional education of hand-drawn sketching, they often encounter bottlenecks in this
process [3]. The computer digital hand-painted design can "transfer" the paper-based sketch to the computer screen, so that more people can master this skill. With the continuous development of computer-based digital hand-painting technology, new jewelry design models have emerged from time to time. In the jewelry design industry, computers have been further used [4].

Jewelry design industry is an indispensable factor in the field of decoration industry. With the current fast-paced era and the rapid update of popular elements, this requires efficient operation of the jewelry design industry and timely update of design concepts. This puts forward higher requirements for the specific jewelry design speed, and traditional jewelry design techniques have gradually been unable to keep up with the times [5]. The jewelry industry also plays an important role in my country's economic development. In recent years, gratifying developments have been achieved in terms of market share and industrial chain perfection, but there are still problems such as serious product homogeneity and unobvious regional characteristics. This article summarizes the current situation of the jewelry industry in the system, demand, mode, etc. through field observation and literature review, expounds the problems faced by the jewelry design industry from the perspective of innovative design, and proposes countermeasures to promote the healthy development of the jewelry design industry [6].

The advantage of computer digital hand-painting technology in jewelry design is that the diversity of jewelry materials and processing technology can be selected at will, and it has become the carrier of our emotional design research [7]. At the same time, the computer digital hand-painting technology has a very free creative space on the basis of satisfying the basic functions, and designers can freely gallop and play [8]. The advantages of computer digital hand-painting technology for traditional technology in jewelry design are: First, jewelry design runs through multiple aesthetic aspects, without the limitation of design themes and design styles, and has a variety of art forms, and computer digital hand-painting technology can be used for Jewelry design provides a wealth of materials and expressions [9]. Secondly, the designer's choice of materials is not subject to any limitation. The discovery of expressions and characteristics of different materials can provide new ideas for design. Therefore, in order to adapt to the rhythm of modern jewelry design, the jewelry design industry should continue to innovate and keep up with the pace of high-tech development [10]. The jewelry designer should make full use of scientific and technological achievements, such as the advantages of computer digital hand-painting technology in jewelry design. This article will study the current problems of jewelry design and the innovative development of jewelry design in the future based on the research of computer digital hand-painting technology. From a rational point of view, the combination and mutual assistance of jewelry design in the use of computer digital hand-painting technology will be analyzed, and combined with a reasonable analysis of the breakthrough development of the current level of jewelry design.

2. Method

2.1. SVM Algorithm

Use SVM algorithm to estimate the influence of computer digital hand-painting technology on jewelry design industry.

Define the objective function formula:

\[ f(\omega) = \min_{\omega} \frac{1}{2} ||\omega||^2 + \frac{1}{m} \sum l(\omega, (x,y)) \]

2.2. Select Samples for Estimation

The selection of samples is extremely important. Based on the research on the innovative development of computer digital hand-painting technology in the jewelry design process based on the SVM algorithm, we randomly selected the influence of the big data in the jewelry design process on the computer digital hand-painting technology. Through the particularity of the SVM algorithm, it is studied to increase the reliability and accuracy of the results.
In the research, a sample \( t \) is randomly selected under unconstrained conditions, where \( i \) represents the intrinsic properties of the sample, and \( f \) represents the external activity (number of iterations) of the sample, which is brought into formula (1):

\[
f(\omega, i_t) = \frac{\lambda}{2} ||\omega||^2 + I(\omega, (x_i, y_i))
\]

Solve for (2) Sub-gradients:

\[
v_t = \lambda \omega_t - I[y_{i_t}\{\omega_t, x_{i_t}\} < 1]y_{i_t}x_{i_t}
\]

Formula (3) is brought into formula (4):

\[
\omega_{t+1} \leq \omega_t - \beta v_t
\]

Simplified derivation:

\[
\omega_{t+1} \leq (1 - \frac{1}{t})\omega_t + \beta I[y_{i_t}\{\omega_t, x_{i_t}\} < 1]y_{i_t}x_{i_t}
\]

3. Methods and Experimental Research Design

3.1. Attach Great Importance to Independent Innovation and Strengthen the Construction of Computer Talent Team

We have thousands of years of brilliant cultural and artistic heritage. Countless celebrities and sages have given us precious materials for artistic creation. In addition, China is the most populous country in the world, which can give us inspiration for artistic creation and design in jewelry design. Independent innovation is not only critical for jewelry design and production, but also critical for other countries and nations. The flexible use of electronic information technology combines the fine Chinese traditional culture with artistic creation and design inspiration to innovate jewelry design. Make new contributions to development. At the same time, more emphasis should be placed on the cultivation of computer talents, and the construction of the computer talent team should be strengthened, so that the development of computer digital hand-painting technology can be achieved faster. The application of computer digital hand-painting technology improves the processing precision of jewelry design and production, and improves the authenticity of jewelry. The design inspiration of each jewelry has more independent activities in the illusory world. The comprehensive application of computers, kinematics, electronic optics and other disciplines makes the visual effects of the face-lift design more realistic, and designers can see more Realistic and perfect jewelry close to what you expect in your heart.

3.2. Constructing a Jewelry Design System Based on Computer Digital Hand-Painting Technology

The country should build a nationwide jewelry design system that uses computer digital hand-painting. After jewelry creation has passed the initial selection of the market, it will not be abandoned, but can provide downstream jewelry with endless jewelry materials and design inspiration sources. This kind of method not only reduces the financial investment in jewelry design and production, because if there is no computer jewelry system, the part that is not accepted by the market symbolizes a failure, and all time and money investment is wasted. On the other hand, the construction of a jewelry system based on computer digital hand-painting technology can reduce the risk of shifting market tastes and reduce the waste of various resources. With its own jewelry system, it can save resources, reduce production costs, and devote more time and energy to the quality of jewelry. This is compared with traditional ordinary jewelry perspective technology. The application of computer digital hand-painting technology has improved the display effect of the entire jewelry design. The computer work platform can greatly promote the innovation and development of the jewelry industry and inject it into the
jewelry industry. In order to enhance the status in the hearts of consumers. At the back end of the jewelry industry development chain, what to do is not only to promote the brand image, but also to promote the development of its surrounding industries, using Internet technology to promote the image and achieve a win-win situation.

3.3. Experimental Research Objects
First of all, the investigation and research method is adopted, which is specific to the design method selection of each jewelry designer to conduct meticulous and in-depth investigation and research, research data, research rules, and extract and summarize first-hand information. This paper selects a total of 100 jewelry designers from multiple brands and independent jewelry designers. From factors such as jewelry design methods, jewelry needs and jewelry design concepts, a practical investigation and research on whether to use computer digital hand-painting technology is carried out.

Table 1. Questionnaire survey report

| Questionnaire issuance and recovery | Brand jewelry designer | Independent jewelry designer | total |
|------------------------------------|------------------------|-----------------------------|-------|
| Issue                              | 62                     | 38                          | 100   |
| Recycle                            | 60                     | 38                          | 98    |
| effective                          | 59                     | 37                          | 96    |
| Efficient                          | 95.1%                  | 97.3%                       | 96%   |

As shown in Table 1, in the investigation of the research report of the experiment, a total of 100 jewelry designers were selected and given an experimental research questionnaire, and a questionnaire survey was conducted on the 00 jewelry designers to evaluate each designer's jewelry design Factors of whether to use computer digital hand-painting technology. For this, we first need to study various patterns of jewelry design in detail and thoroughly, and at the same time study the direct assimilation of data information in order to apply research and research methods, as well as to concretize and summarize specific cases. Secondly, it analyzes the use of case analysis method, which requires the design patterns of multiple jewelry designers to analyze the current situation of jewelry design through case studies.

4. Results

4.1. Whether the Jewelry Design Uses Computer Digital Hand-Painting Technology is Affected by Various Factors

Figure 1. Investigate the influence of various jewelry design factors on design patterns
The data shown in Figure 1, from the data shown in the figure, we can understand that jewelry designers are affected by the "jewelry design method" on whether to use computer digital hand-painting technology accounted for the largest proportion, reaching 43.1%. Designers in the influence of "jewelry demand" accounted for 25.2%, while the proportion of designers in the "jewelry design concept" was only 18.5%. It can be seen that the reason why jewelry is closely related to people is because different people pass through matching Bringing a variety of jewelry can form different atmospheres. As an independent individual, human beings have different temperaments and personalities. Each person's preferences, age, physical characteristics, height and gender are also design elements that jewelry designers need to fully consider. Therefore, the connotation given to jewelry is also different. In the creation and design, because people have their own independent thoughts and corresponding cultural connotations, it is necessary to highlight different design features for different objects. The coordination of several elements can make the whole jewelry present a very harmonious effect. It presents a sense of beauty under the appearance, which makes people break the heart and make people feel a kind of lust after seeing it. design concept. Therefore, choosing the design mode using computer digital hand-painting technology can make the jewelry elements have a closer connection, and can design more excellent jewelry in a limited time.

4.2. Comparison of Factors between Brand Jewelry Designers and Independent Jewelry Designers

It can be seen from Figure 2 that the reason for the "jewelry demand" of brand jewelry designers is greater than the use of computer digital hand-painting technology by independent jewelry designers. In other cases, the use of computer digital hand-painting technology by independent jewelry designers is greater than Brand jewelry designer. It can be seen that the application of computer digital hand-painting technology for most jewelry designers is limited to "application of technology for technical application", and lack of innovation in the application of jewelry design mode. All jewellery designers should understand one thing: an outstanding jewellery work is by no means cool expression, and the real meticulous details can leave an unforgettable impression on the viewers. Therefore, computer digital hand-painting technology can be used to the greatest extent in the nuanced details, which is more conducive to the display of jewelry details. In the jewelry design process, many jewelry designers apply technology applications only for the purpose of technology applications, and have not established the concept of technology applications for their own use. Therefore, these artificial works are just the finished products of a lot of technology applications. Soul, thus lost a good impression of computer digital hand-painting technology. Before creating jewelry, jewelry designers usually need to conceive the content of thoughts they need to express, and carefully consider the needs of jewelry, carefully consider the shape of the design, all elements are visual materials that can infect viewers and creators, and related jewelry Designers need to fully combine their own reality and perception, and make reasonable matching of relevant materials, so as to stimulate the appreciation of the viewers.
Jewelry designers need to recognize whether the selected materials are suitable and whether the matching form of the materials is beautiful or not, and at the same time, observe at the end. The final presentation result does not conform to the concept expression of the creator, and deeply strikes the actor himself.

5. Conclusion
In summary, the development of jewelry design in a diversified direction is the inevitable result of the development of the times. Under the conditions that the trend of globalization is becoming more and more obvious, the influence of modern people's emotional expression, pursuit of personality, and science and technology has prompted jewelry design. The arts are becoming more diverse. The creative means and innovative ideas of jewelry design art present a diversified development trend, which can not only meet people's practical and functional requirements, but also fill the vacancy from the spiritual level. In the current innovation and development of jewelry design, computer digital hand-painting technology is an extremely important breakthrough point, which can make new developments for jewelry design models.

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