Application of Computer Aided Software in Drawing Design

Yi Sheng*
Academy of Fine Arts, Hunan Normal University, Changsha 410012, Hunan, China

*Corresponding author e-mail: shengyi@hunnu.edu.cn

Abstract. With the rapid development of computer technology in our country, computer-aided design has been widely used in various fields of modern life, and has also been widely used in many fields. This article mainly discusses the operation of computer software applications in painting and the shortcomings of technical applications, and then discusses the specific viewpoints of software application and development in computer art design. The application and advantages in the art industry continuously improve the scientific level of contemporary art. Computer-aided software applications can effectively improve work efficiency and release work. Therefore, auxiliary software can improve work efficiency while meeting design requirements. Through the research on the application of utility programs, it provides a corresponding reference for the artistic design. Computer-aided design software is used more and more in artistic design, and its application effects are becoming more and more important. However, the application of its software must also be combined with market demand, and combined with the required content and standards to promote the perfect combination of software and interior design. Computer applications can reduce manpower waste by at least 90% and speed up the cycle of professional design changes.

Keywords: Computer-Aided Technology, Art Design, Development Prospects, Applied Research

1. Introduction

1.1 Background and Meaning
Due to the continuous progress of society, people's aesthetic methods have also been improved, making traditional painting less and less able to attract people's attention, so brand-new painting methods have appeared. Dr. Tula A K said in the article that with the rapid development of computer graphics, many ideas that could not be expressed through language and design in the past can be realized [1]. The application of computer-aided design software technology is gradually being realized. The use of computer-aided design software can better represent people's spiritual pursuits. Due to the functional development of computer graphics software, computer-aided design has accelerated the development of art [2-3]. Through computer-aided design software, you can better complete the corresponding design problems, thereby improving efficiency. By generating two-
dimensional designs and three-dimensional models, modern design concepts can be better communicated.

1.2 Related Work
The computer can express in multiple directions through two-dimensional and three-dimensional graphics, so that people can immediately understand the design of different positions, which can further reduce the incomprehensible misunderstanding of graphics [4-5]. Computer-aided software can make the dimensions more accurate and minimize errors. It can be seen that the advantages of graphics computers far exceed those of traditional graphics, and will not fail due to inaccurate graphics. In addition, computers can form different visual experiences for people, and will not exaggerate the results through artificial means, and can match the design [6].

When using a computer, it can more intuitively control the relationship between the design object and the overall environment, can make the two perfect combination, so as to integrate the elements into the environment, it can also reflect the actual appearance [7]. After that, the information of the illuminated object is transmitted through the simulation of the object under lighting conditions, and then the implementation of the object scene is displayed later. Compared with the flat design, this method is more strict.

In terms of solutions, it can be modified repeatedly, and because of the development of computers, it is more convenient to modify, which not only improves work efficiency, but also solves the troublesome problem of traditional design modification. Knizhnik A A proposed that computer-aided systems can increase the speed of copying and present the most ideal images [8]. Show through the designer's hands. Computer-aided software significantly improves the output performance of the design drawing, and can display various drawing results together, greatly improving work efficiency. The computer can restore the final visual effect of the scene for the individual [9]. With the continuous development of society, computer technology and applications have been greatly improved, to a large extent to make up for the shortcomings of static images [10]. It can not only be distinguished from traditional design schemes, and can analyze various parts more quickly, but also can beneficially observe the organizational structure of each department. However, the application of computer-aided systems is difficult and cannot fully cover the design and art industries.

1.3 Main Innovation
It lies in the application of scientific research methods, such as bibliographic research methods, case research methods, subtraction and verification methods, qualitative and quantitative analysis methods, and comprehensive induction methods. The development status of modern computer-aided software in my country is summarized, and the problem of the integration of computer-aided software and art industry is solved at this stage; secondly, the factors affecting the development of computer-aided software in my country are studied. Finally, it proposes to accelerate the integration of computer-assisted software systems and the art industry, and use the convenience of the database to select appropriate methods and paths to follow the correct path of social development.

2. The Application Method of Computer Aided Software in Drawing Design

2.1 Software Introduction
3DMAX has a wide range of applications in packaging science and engineering. It has powerful modeling functions and performance materials. Using this software, a virtual 3D scene can be created on the computer, and the designed packaging scene can be converted into a virtual motion effect. Image editing software such as PS, CDR, PMCK and Ir is more aimed at packaging design courses provided by graphic design professionals. This 2D image design software has graphic design, text design, graphic editing, etc., and is easy to use and powerful. CDR is a complete software, including design tools, vector illustrations, etc. PS image editing software is the most widely used image editing software, which can be used to insert, copy, crop, collage and combine photos. It can also use special
functions to make pictures produce artistic effects. Most of them are used for color design and layout design including packaging design. The application of computer-aided software has a direct impact on the computer. With the widespread use of computers, some early expressions can no longer keep up with the requirements of the times. Computer-aided design software can complete design tasks that require manual design and complex processing, and improve design efficiency, quality and effectiveness. Make up for the shortcomings of traditional manual design. Although the application of computer technology, design software technology and auxiliary design in Chinese design started late. However, our country’s strategy of walking in small steps allows us to reach the forefront of the world as quickly as possible.

3. Application Experiment of Computer Aided Software in Drawing Design

3.1 Survey
In order to ensure the validity of the questionnaire, we conducted exclusive interviews with 10 experts in traditional painting. The validity of the questionnaire is reflected in the assessment of the overall status, design content and structure of the questionnaire, and many surveys have been conducted based on the questionnaire. In order to make the final questionnaire meet the research needs, the specific status of the questionnaire validity test is shown in Figure 1:

![Figure 1. Questionnaire survey report](image)

3.2 Questionnaire Assistance System
A survey questionnaire design assistance system based on big data developed according to requirements is characterized in that: the topic semantic analysis module analyzes the keyword information after word segmentation, and calculates the following attribute methods, respectively: Theme keyword attributes, keyword appearance frequency, keyword appearance attributes, keyword theme relevance. The relevance of a keyword after the word segmentation result determines its degree of interaction with the topic. The calculation formula for relevance is as follows:
\[ S = (\bigcup A \bigvee f) \]  

Among them, let X and Y be two non-empty subsets on U. Assuming that for any \( e \in X \), \( e \in Y \), then X is a subset of Y, or Y contains X, denoted as \( X \subseteq Y \). Let the formula be as follows:

\[ C(X, Y) = \begin{cases} 1-|X \cap Y|/|X|, & |X| > 0 \\ 0, & |X| < 0 \end{cases} \]  

Among them, \( C(x, y) \) is the joint probability distribution function of X and Y. \( X \) is the result of keyword segmentation, \( Y \) is the survey topic. \( C(x) \) and \( C(y) \) are the marginal probability distribution functions of X and Y, respectively, when using the keyword theme as the feature quantification of the keyword extraction, a Patricia Tree (PAT Tree) is constructed for the text and the title, and then the correlation is calculated.

4. Development of Computer Aided Design in my country

4.1 Development Status of Computer Aided Design in My Country

The development of computer-aided software in our country began in the 1970s. Before the 1990s, most of our painting methods were handmade. In the early 1990s, computer-aided design software began to be used in the painting industry. By the end of the last century, computer-aided design has gradually become the backbone of artistic design. With the development of computer-aided software in my country in the past ten years, the computer has produced detailed drawings for the auxiliary category, and the computer sketch can be conveyed to the original drawing plan through 3DHome, SketchUp, etc. Its function is faster and less accurate. If the idea can be realized in a shorter time, it can be understood intuitively. Due to the relatively short application time of computer technology, there are few pioneering studies in the painting industry and computer technology.

Computer technology uses multicultural perspectives, pragmatism, hermeneutics, semantics and other ideas, and introduces communicative action theory based on the need to reconstruct social critical theories. On the basis of critically inheriting Husserl's "life world" theory, Wittgenstein's philosophy of language and Freud's psychoanalysis, the founder of phenomenology, he gradually proposed his own theory of communicative action. He believes that communicative action is an action whose purpose is to understand. If the actors cannot understand each other, share knowledge, trust each other, and are consistent with each other, the communicative action cannot continue. The specific results are shown in Table 1.

| Brand influence | Subject influence | group influence |
|-----------------|-------------------|----------------|
| market share    | Popularity        | grassroots     |
| Social reputation| People-oriented   | ecological design |
| Develop innovation | innovation in teaching and innovation in scientific research | innovation in practice and education |

4.2 Resources of This Article Come from the Questionnaire Survey

Investigation methods include questionnaire surveys, field investigations, interviews and literature surveys. Three universities were randomly selected to distribute the online questionnaire. The specific results are shown in Figure 2: The distribution of grades is relatively even. Among them, freshmen accounted for 11.9%, sophomores accounted for 27.5%, and juniors accounted for the most, accounting for 53.2%, the seniorsaretheleast, only 7.4%.
4.3 Insufficient Application of Computer Aided Software in Drawing Design

Many vulnerabilities still exist in computer-supported software applications. Our country has made great progress in the realization of practical software, but in practical applications, the improvement of quality still needs to be further strengthened. The overall development level of auxiliary software is still low, and further innovation is needed, especially in the corresponding theoretical software research. When developing software, it is necessary to pay attention to the deepening of modeling and algorithms to enhance theoretical understanding. The utility application has not yet completed any really useful design, and the relevant design talents are relatively insufficient. These aspects will inevitably have an impact on the further development of our country's utility program design applications. Computer-supported software applications require professionals. However, current graphic design companies have not yet fully implemented computer-aided technology. Some drives mainly use auxiliary software to return goods. They have not yet integrated integrated design and power analysis. The computer software application is still running. There are few talents for computer-aided software applications. The technology is a different and complex system. Not every designer can do this effectively. Some designers have not received professional training and have no understanding of computer application software. Therefore, it is very comprehensive, and there are many shortcomings in implementing specific software.

5. Conclusions

From the above discussion, it is not difficult to see that the application of computer-aided software is becoming more and more important. Whether it is a flat layout or a three-dimensional structure, it has powerful computing capabilities that can display and expand the designer's ideas. Design according to purpose and requirements. Designers can also use the compatibility of the three softwares, convert functions to each other and use them together. Use the best features of each software to achieve design goals. Utilizing high-speed calculation and data processing functions, the design has changed from the traditional manual design to the era of brand new design. In addition, fierce competition in modern society requires the effective completion of new products. Designing with the help of computer software is an inevitable trend in the development of modern science and technology.

References

[1] Tula A K , Babi D K , Bottlaender J , et al. A computer-aided software-tool for sustainable process synthesis-intensification. Computer Aided Chemical Engineering, 2017:255-260.

[2] Asmat A , Samsudin S S , Wahid S N S. LEARNING STATISTICS COURSE USING COMPUTER_AIDED SOFTWARE: A CASE STUDY AMONG FURNITURE TECHNOLOGY STUDENTS. International Journal of Modern Trends in Social Sciences, 2020, 3(11):99-106.
[3] Xu S. Analysis of Electronic Circuit Interference in Electrical Debugging Based on Computer-aided Software. Journal of Physics Conference Series, 2020, 1648:032045.

[4] Udaja Y. EKSPANPIXEL BLADSY STRANICA: Performance Efficiency Improvement of Making Front-End Website Using Computer Aided Software Engineering Tool - ScienceDirect. Procedia Computer Science, 2018, 135:292-301.

[5] Kim S. Development of a computer-aided design software for smart garments. International Journal of Clothing Science and Technology, 2017, 29(6):845-856.

[6] Siniglazov V, Godny A. Integrated computer-aided design system software of navigation complex// International Conference on Methods & Systems of Navigation & Motion Control. IEEE, 2016:59-62.

[7] Robinson, Ryan, E, et al. Flow dynamics in pediatric rigid bronchoscopes using computer-aided design modeling software. The Laryngoscope: A Medical Journal for Clinical and Research Contributions in Otolaryngology, Head and Neck Medicine and Surgery, Facial Plastic and Reconstructive Surgery, 2016, 126(8):1940-1945.

[8] Knizhnik A A, Goryachev I A, Demin G D, et al. A software package for computer-aided design of spintronic nanodevices. Nanotechnologies in Russia, 2017, 12(3-4):208-217.

[9] Li M, Narayan V, Gill R R, et al. Computer-Aided Diagnosis of Ground-Glass Opacity Nodules Using Open-Source Software for Quantifying Tumor Heterogeneity. Ajr Am J Roentgenol, 2017:1-12.

[10] Damyanova M, Sabchevski S, Zhelyazkov I, et al. Development of problem-oriented software packages for numerical studies and computer-aided design (CAD) of gyrotrons. Journal of Physics Conference, 2016, 700:012010.