

# Research on the Application of Computer Artificial Intelligence Technology in Graphic Design

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**Abstract.** The development and progress of mankind is a continuous process of developing new tools and new products. As a form of graphic design that spans thousands of years, graphic design has become an indispensable part of our human society from the initial murals to the present day. The basic form of graphic design. The streets and alleys and various electronic media release countless graphic design works every day to fill our lives. Both the rich folklore and modern festivals are the driving force behind the promotion of graphic design. With the development and application of artificial intelligence and big data, graphic design is no longer an unconstrained process of thinking, but a new ecological design with scientific data analysis and graphic design commonality.

**Keywords:** Computer, artificial intelligence, graphic design.

## 1. Introduction

Chinese graphic design has experienced handicraft, craftsmanship, and pattern breeding. It has developed from practical art and commercial art. After the founding of New China, it has undergone the interpretation of graphic design forms such as decoration art, graphic design and visual communication design, and has continued to explore, develop and improve. Now it has become the largest, fastest growing and most successful type in the national design field. Especially since the 21st century, the development of social politics, economy, and culture has provided a broad platform and good development opportunities for the development of graphic design in the new era. In the era of artificial intelligence, graphic design is also facing more opportunities and challenges.

## 2. Limitations of traditional graphic design

In traditional graphic design, points, lines, and surfaces are the core of the entire design and the skeleton of the design. Through the designer's understanding and application of points, lines, surfaces, and colors, a floor plan that meets customer requirements is designed. The application of points, lines, and surfaces also has rules and skills. Predecessors have summarized the aesthetic criteria of everything in the world. Based on this criterion, designers use their own understanding and interpretation of beauty to concrete abstract thinking on the screen. Graphic design has gone through a century of history. In this long river of design, graphic design has developed from early realistic design to today's diversified conceptual design, making our lives increasingly exciting. The designer summarized many design techniques, methods, composition, colors, etc. These concepts summarized by the predecessors are a process of big data, and with the rapid development of computers and artificial intelligence, these data analysis will be calculated in one second. The way of analysis is tens of thousands of times higher than the analysis of the human brain[1].

## 3. Computer artificial intelligence technology

Computer artificial intelligence technology is based on computer technology, and its development and application require the use of a variety of software and hardware. The essence of graphic design is that the staff uses artificial intelligence to construct the virtual world. In this process, the staff needs to always follow the special requirements of graphic design and the special structure of scenes and cases, and the materials need to be based on the work. Operations such as adding or lighting. The plane design drawing also needs to set the motion trajectory. After the design work is over, the computer processes the animation through automatic calculation, and then outputs it. As far as

computer artificial intelligence technology is concerned, it is mainly to create a virtual world for people, so as to provide more customers with a good personal experience. The application of computer artificial intelligence technology in graphic design has many advantages, for example, it can make people perceive the world from a diversified perspective, and provide them with complete visual, auditory and tactile sensations. At the same time, the processing of computer artificial intelligence technology also makes it possible for people to truly perceive various pictures in the virtual world, and the interaction is extremely strong[2].

#### 4. The relationship between artificial intelligence technology and graphic design

From a certain perspective, artificial intelligence is produced by machines, which means that computers are the direct output of human-computer artificial intelligence and industrial intelligence design. Graphic designers play a role in creativity and conception in this process. In general, graphic designers use corresponding science and technology to input their creativity and ideas into an artificial intelligence system that can output computer artificial intelligence in the form of graphic design design, and then indirectly through the artificial intelligence system. Create graphic design for computer artificial intelligence products[3]. As the current artificial intelligence technology and intelligence level are not mature enough, the graphic design value of the output graphic design computer artificial intelligence works cannot reach the level of satisfaction of graphic designers. This requires graphic designers to combine their own graphic design Understand to grasp the process of graphic design creation, and realize the creation of graphic design design that can meet the aesthetic demands of the audience. The system is shown in Figure 1.

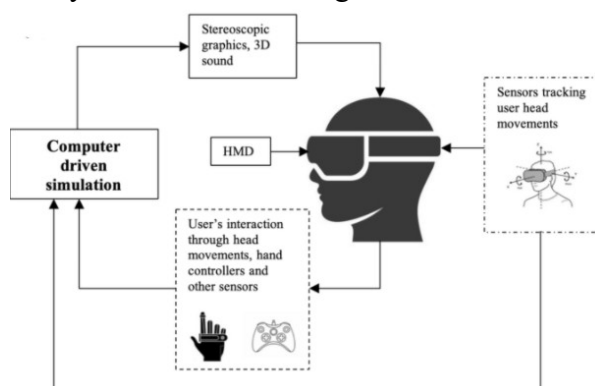


Figure 1. Computer sports virtual reality technology equipment

#### 5. The basic characteristics of artificial intelligence technology for graphic design

##### 5.1 Dependence on technical means

The dependence of artificial intelligence graphic design on technological means is self-evident, and this dependence on technological means is not only reflected in the creative means of artificial intelligence graphic design, computer artificial intelligence is also manifested in artificial intelligence. Conceptual content, presentation methods, communication channels and receiving methods of graphic design. The reliance on technology in the concept and content of computer artificial intelligence is mainly manifested in the fact that graphic designers start with computer artificial intelligence in the subject and content of graphic design creation to introduce related technical topics. The penetration of different fields of computer artificial intelligence in life, the intelligentization of machines and the future development trend of human beings are full of unprecedented fear of computer artificial intelligence. This fear is like graphic design brought by human industrial production in the second half of the 19th century. The same concerns[4]. The idea of computer

artificial intelligence is transformed into a specific and perceptible graphic design form by introducing corresponding technical means and technical equipment in the field of vision and hearing perception.

## **5.2 Conception of artistic content**

Artificial intelligence art breaks through the previous single-perception mode and two-dimensional presentation mode, and realizes the multi-dimensional and omni-directional presentation of the content of artistic graphic design, which to a certain extent ensures the integrity of artistic concepts and artistic thought expression graphic design. A short virtual imaging art scene can fully express the artist's subjective awareness of a certain social graphic design phenomenon and topic. Artificial intelligence art is better at conceptualizing art and expressing abstract ideas by virtue of its technical graphic design techniques such as artificial intelligence, the Internet, and big data. It can transform extremely abstract conceptual art ideas into specific and perceptible art forms by introducing corresponding technical means and technical equipment in the field of vision and hearing perception. Construct a decomposition mode of conceptual abstract art thinking. Through this decomposition mode, abstract conceptual art concepts of graphic design are transformed into visual art forms that are perceivable by art receptors. The artist's abstract thinking world builds a bridge of communication, and realizes the zero-obstacle graphic design of art graphic design artist's artistic emotion transmission and art acceptor's acceptance of art concept.

## **5.3 Diversity of Graphic Design Forms Graphic Design**

The types of artificial intelligence graphic design forms are directly related to the penetration of artificial intelligence technology in the field of graphic design. with the explosive development of artificial intelligence, the technical forms of graphic design have been continuously enriched. In addition to supplementing and developing traditional graphic design creation methods and graphic design forms at the technical level, artificial intelligence technology has also formed many new graphic design forms with independent graphic design languages and characteristics. Artificial intelligence graphic design has many problems in the classification of graphic design forms, such as multi-disciplinary, cross-domain, and the intersection of graphic design forms. At the same time, the trend of cross-integration development between graphic design ontology is becoming more and more obvious. These are to a large extent The standards and boundaries of the classification of artificial intelligence graphic design forms are blurred, and the difficulty of artificial intelligence graphic design classification is increased. Throughout the domestic and foreign graphic design classification models, from ontological classification models, psychological classification models, semiotics classification models, and functional theory classification models are not suitable for artificial intelligence graphic design with graphic design and technology "comprehensive".

# **6. Application of artificial intelligence technology in graphic design**

## **6.1 Introducing artificial intelligence algorithms**

Artificial intelligence algorithms are introduced in graphic design. The application of artificial intelligence algorithms can actively obtain the physical landscape and map its intelligence to the flat background. The application of artificial intelligence design is realized through virtual technology. In virtual technology, through Obtain the time when the signal arrives in the indoor landscape to determine the specific location information of the landscape. The application process first needs to establish a signal transmitting device with a known transmission rate in the virtual static state, and record the time from the transmitting device to the receiving device during the measurement. After determining the location of the physical landscape, the location data of the physical graphic design landscape is saved through the virtual platform, and a new graphic design plane is established on the virtual platform. Introduce the physical landscape data into the new plane, adjust and lay out the position of the physical image in the plane through the mouse graphic design, and use it as the

background image of the graphic design plane, so as to realize the plane background graphic design based on the artificial intelligence algorithm. User equipment is shown in Figure 2.



Figure 2. Research on Computer Virtual User Equipment

### 6.2 Adopt artificial intelligence exchange technology

Interactivity is a very special feature in graphic design, and it is also an important part of graphic design. In the virtual platform, through the adjustment of various product types and placement positions required in the graphic design process, virtual reality technology can be used to realize the interaction of graphic design in the form of modeling language. In the actual graphic design process, through the introduction of sensor equipment, it can provide users with more realistic contact and perception, and realize a complete picture of the surrounding environment. At the same time, users can also switch the application scenarios in the virtual platform at will according to their needs, or even modify the actual state of the modeling, so as to realize the interaction between the user's three-dimensional environment and the graphic design. Access to the virtual scene, and through the corresponding modeling language, realize the control and modification of the virtual graphic design space.

### 6.3 Smart Rendering Reference

In order to make the graphic design more powerful, the computer artificial intelligence rendering technology is used to design the color of the plane, clarify the landscape material and the positioning calculation method of the corresponding position, and assign values to the external influence conditions, such as ambient light and transparency, and Fill in the key information such as the material and texture of the landscape into the key entity. In the later stage of the design process, the designer can use the modification tool to modify the above information appropriately. After installing the corresponding target camera, clarify the observation angle to ensure that the surrounding environment has a good rendering effect. In the process of rendering the graphic design, the background should be added appropriately, so as to promote the concept model to simulate the indoor plane more realistically.

### 6.4 Adjustment

According to the different needs of customers and different production content, artificial intelligence technology and graphic design often adopt different combinations or production methods. At the same time, the staff also need to observe and analyze various data obtained by the motion capture system, so as to adjust the practical technology more purposefully and further enhance the realism of the scene design. The application of adjustment technology in graphic design can not only help the staff to grasp the characteristics of the data, but also can achieve the purpose of trimming the data by inserting and overlaying. After the data adjustment is completed, on the one hand, it is necessary to ensure that the data group can meet the production requirements, and on the other hand, it is necessary to adjust the subsequent related mechanisms according to the data group. In the case of greater difficulty and more doped elements, the application of this mediation mechanism can

provide staff with an application system that can be applied to a variety of situations. The system can not only complete the adjustment of forward dynamics, but also adjust the reverse dynamics according to actual needs, avoiding manual selection by staff. This design method will greatly increase the standardization of the scene and help improve work efficiency. It is worth reminding that some staff paid too much attention to the enhancement of functions in the process, and ignored the adjustment of complexity, which made the overall system more messy, or paid attention to the adjustment of complexity, ignoring the improvement of functions and the enhancement of screens. This requires staff to pay attention to finding a balance between functional enhancement and complexity when making adjustments using computer technology.

## **7. The development trend of artificial intelligence technology in graphic design**

### **7.1 Graphic design strengthens the diversification of professional knowledge**

The arrival of the age of artificial intelligence in graphic design is the age of graphic design for postgraduate qualifications, experience, and knowledge. Due to its development, artificial intelligence must have graphic design drawbacks in design. It can imitate various design techniques, but often the same Similar phenomena will appear in the design of commodities and products with similar graphic designs. Therefore, it is required that graphic designers must race against the computer. The computer is the mechanical body of program input. Therefore, graphic designers should strengthen and strengthen their professional knowledge. Not only is it necessary to be proficient in graphic design theory and software, but also to master the basic knowledge of animation and 3D graphic design.

### **7.2 Graphic design integrates cross-border technology**

Graphic designers who are interested in graphic design depend on the fact that they have good aesthetics, excellent graphic design and visual communication design theory knowledge, and rich design experience. They can complete most of the designs in graphic design, and with the diversity of graphic design In fact, a lot of design similar to graphic design can actually be completed by cross-border. In the graphic design graphic design year, you can print the photo of the person and the car on the graphic design stamp. The design requirement is not difficult, that is, the serial number is added to the graphic design and the fixed-size picture is replaced. If you simply use it It seems that it is very fast to modify the graphic design one by one by manpower, but if tens of thousands of pictures are required every day, the graphic design manpower is difficult to achieve, and the graphic design Excel graphic design form system itself has a programming language graphic design The function of language, clever use of graphic design Excel graphic design table writing program, and then use the execution function of graphic design Photoshop graphic design, you can quickly perform data calculation, graphic design can achieve the function of replacing tens of thousands of files a day, This requires graphic designers to learn a simple programming language to improve their graphic design capabilities. graphic design

### **7.3 Graphic design development and innovation ability**

The modern graphic design is the era of cloud computing. Repetitive operations have been digitized and computer graphic design has become. So we designers are required to have a typical sense of innovative graphic design, apply the sense of innovation in design, and use brand design thinking. The theory of graphic design cleverly integrates two different things using design aesthetics and graphic design, so as to achieve that the new design content is greater than the original independent content of graphic design. How to develop a sense of innovation requires that our vast number of graphic designers can constantly absorb new knowledge and constantly open up their horizons. Graphic design constantly seeks out different independent beautiful things in nature. The technology is shown in Figure 3.

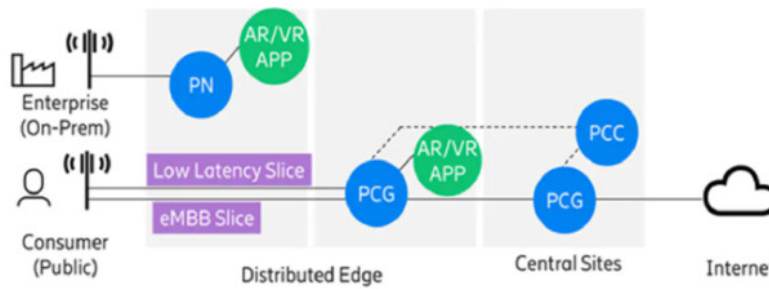


Figure 3. Computer Sports Cloud Technology Application

## 8. Conclusion

Under the impact of strong artificial intelligence, how traditional graphic design should be based on human cognition to traditional graphic design, through the brain's integration of previous graphic design experience and knowledge, to achieve a high-quality design process, but With the advent of the era of artificial intelligence in graphic design, designers should make use of the big data analysis capabilities of artificial intelligence in graphic design to create. This article focuses on the analysis of the application of artificial intelligence elements in the background of graphic design, plane cross-plane design interaction, color rendering, and three-dimensional virtual intelligent scene modeling. It has a certain reference for the application of graphic design artificial intelligence technology in graphic design. For graphic design, graphic design also has a good promotion effect on the application of artificial intelligence technology in graphic design. Due to the limited time of this research, the research content still has some shortcomings in graphic design. The application range of artificial intelligence elements in graphic design is relatively wide. With the application of graphic design artificial intelligence elements in graphic design, further research is carried out. Promote the continuous development and innovation of the graphic design industry.

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