Research on the Application of Computer Aided Image Design System

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Abstract. In order to convey some useful information, people often design some virtual characters to complete the task of information transmission. Animation is a kind of video technology for people to educate children. Cartoon characters are virtual character models established by designers. Designers create different kinds of character models. The behavior of these character models is similar to that of human beings. Virtual characters can help us accomplish many tasks [1]. The use of computer-aided system image design has been recognized by many designers. This paper briefly outlines the concept of image design. This paper puts forward the types of professional CAD software. This paper also completed the application-oriented research of the auxiliary character image design system.

Keywords: Computer, Assistant Character, Applied Research

1. Introduction

With the improvement of people's living standards, people's ideological and cultural progress gradually. People pay more attention to self-image management. This will be the design process of the virtual designer. In fact, the animation industry market in China occupies a large economic capacity. The economic supply of online game application market is also similar. In order to effectively develop the animation industry and online game industry, people put forward the auxiliary character image design system. The traditional character image design is done by hand. Hand drawn drawings are a simple way to sketch ideas. Unfortunately, the error of hand drawing is very large. People put their eyes on the computer industry.

Nowadays, the design of virtual characters is very simple. With the help of computer technology, the design scheme of assistant characters is provided by computer. Non professional designers can also design corresponding virtual characters through computer. Many game players even began to design their own online games. With the help of computer-aided character system, virtual characters seem to have been integrated into our lives (see Figure 1). The basic concept of image design is mentioned in this paper. The application-oriented research of auxiliary character image design system is the final research direction of this paper.
2. Theoretical overview of image design

2.1. Basic concept description
Image is an independent word. Design is also a separate word. Their meaning is different. Image refers to shape and appearance. It can reflect people's basic idea of dressing. He can also reflect people's basic idea of body. Design refers to the related tasks completed according to certain requirements. The image design in this paper refers to the scheme design. Generally speaking, image design includes many kinds.

2.2. History of image design at home and abroad
The basic concept of image design was first put forward by foreign designers. In ancient Egyptian society, aristocratic women needed make-up [2]. Their make-up skills have reached a very high level. Ancient Egyptian scholars produced the idea of image design. Women in Qin Dynasty learned to use rouge to decorate their faces. Many designers learn to thrush. The concept of image design was recognized in Qin Dynasty.

Figure 1. Example of virtual character design based on computer aided design system.

2.3. Classification in the broad sense
Nowadays, there are many classifications of the concept of social image. According to the collation of scholars, they divided it into three main aspects. The first is brand design. It mainly includes brand image design. The second is the corporate image design. Its main characters include the design of virtual enterprise advertising. The third design is virtual character design. It mainly includes the design of online game characters and cartoon characters.

2.4. Main factors of virtual character image design
The image design of virtual characters mainly includes makeup design, costume design and action design. The main purpose of makeup design is to render the visual effect. It is the most important part of all. There are many kinds of fashion design. According to the needs of enterprises, designers can design clothes of different nationalities. Action design is indispensable. The combination of action and clothing can show more aesthetic feeling.

3. Examples of today's CAD software

3.1. CAD software based on fashion design
Many people think that CAD software is engineering drawing software. CAD software is widely used.
Experts have studied garment CAD software [3]. This software can cover all aspects of fashion design. It can use computer image processing technology to complete the work of clothing design. Generally speaking, garment CAD software is professional. Many game designers will use this software to design virtual character clothing.

3.2. Photoshop software based on digital image processing
Photoshop software is a charming person in image processing software. It is loved by many design enthusiasts. It can not only complete the picture design. It can also design some characters. In real life, this software is loved by many women. It can fix the flaws in photos. This software is the main application of professional character design engineering. Its effect is remarkable.

3.3. "Meitu XiuXiu" graphic processing software
Meitu XiuXiu is a kind of commonly used software to deal with graphics. Its system interface is very simple. The stability of the system performance is very reliable. Moreover, the use of this software is free of charge. Many people think that Meitu XiuXiu's software is professional software. In fact, nonprofessional designers love this kind of software. The number of downloads of this software has peaked.

3.4. "Beautiful woman" creative game software
According to the above description, many game enthusiasts spontaneously design online games. In this process, they need to design a lot of virtual characters. "Beautiful woman" creative game software is a common character design software for non professional designers. Users can use their own photos to complete the design of virtual characters. Generally speaking, the method of using this kind of software is very simple.

4. Based on the computer-aided image design system application needs analysis

4.1. Style analysis of characters
Before designing characters, designers need to understand the main styles of characters. The choice of styles includes girly, elegant and natural styles. The charm of style is the most able to reflect the characteristics of the characters. Designers need to understand the physiological style, psychological style and action style of the characters. Physiological style mainly refers to the movement characteristics. Psychological style refers to the description of inner thoughts (see Table 1).

**Table 1.** The application and main characteristics of computer aided character design in network.

| Network application    | Character image characteristics | Common software               |
|------------------------|---------------------------------|--------------------------------|
| Cartoon                | Funny style                     | 3D software                   |
| Network game           | Handsome style                  | CAD simulation software       |
| Clothing design        | Fashion style                   | Garment CAD software          |
| Advertisement          | Relaxed style                   | Photoshop                     |

4.2. Analysis of the figure figure
After determining the style features, designers need to understand the body characteristics of the characters. The physiological characteristics of male and female virtual characters are different. The characteristics of their bodies are also different [4]. Designers need to provide computers with a lot of human parameters. According to the setting of these parameters, the computer can depict the virtual character image. The designer needs to write a qualified body description.

4.3. Make up analysis of character image
There are many kinds of make-up analysis. Make up includes facial features and facial features. Hair
color and make-up should also be included. Through the analysis of the makeup of virtual characters, the audience can guess the psychological characteristics of the characters. The makeup design of virtual characters can provide more psychological hints for the audience. Beautiful make-up can easily attract the attention of the audience.

4.4. The analysis of character's clothing
It is very difficult to master the characteristics of clothing. Designers need to first complete the style analysis, shape analysis and make-up analysis. After that, the designer used three-dimensional software to create a three-dimensional character model. According to the proportion of the model's body, the designer will design clothes that match the character's image. The costume design of game characters is very important. It can attract more game players to experience the playability of characters.

5. Based on the computer-aided image design system application function module design

5.1. Design of login system
We can design the software that can assist the character image design as an application system. The website of this system can set up a simple interface. Users need to complete the registration steps before they can use the design system. Therefore, the design of login system is very important. The login system should include a registration system. Login system can store customer registration information. On this basis, it should also ensure the security of the system login entry.

5.2. Establishment of database for character image design
The whole process of character image design is very complicated. The computer needs to extract the data content in the database [5]. According to the design specification of virtual characters, the designer should first design a simple sketch. According to the sequence of the sketches, designers use computers to extract different data contents. Therefore, the content resources of database should be very rich. The cost of establishing a database is very high.

5.3. Establishment of scheme recommendation system
According to the above description, many non professional designers try to use the system to build virtual character models. In order to meet the needs of the public, the operability of virtual character design system should be simple. It is necessary to establish a scheme recommendation system. The user will input the data of the virtual character into the computer. According to the description of these parameters, the computer can provide users with many design schemes.

5.4. Authority management system and function extension system
The system should be divided into two parts. The first part is the user's functional interface. The second part is the designer's management interface. The authority management system is mainly used in the management interface. Designers can manage user permissions. In addition, the function extension system should be used in the function interface. According to the feedback of users, designers can add more application functions.

6. Technical problems to be solved in computer aided image design system

6.1. Application of color simulation technology
In order to make it convenient for designers to design virtual characters, the computer aided system can use color simulation technology to complete the operation. The photos made by the photographer are in high definition. The computer can scan the contents of photos. It can find virtual characters in photos. Through the color simulation technology, the computer can restore the virtual characters in the photos. Unfortunately, this application-oriented technology is still in its infancy.
6.2. Application of stereo scanning technology
If we input the shape of the real person into the computer, we can create a virtual character similar to the real person [6]. This theory first occurred in the production of online games. The virtual character image of many large-scale games is very complex. Stereo scanning technology can scan the whole body of customers. The scanned data will be completely saved in the computer. The computer will generate a similar virtual character. This technology has been employed by foreign game manufacturers.

6.3. Application of biosimulation Technology
In online games, we can find many monsters. Many models of monsters are simulated by computer. Actors can wear some biometric contacts. The computer can turn an actor's whole image into a monster model. The movements of actors and monsters are integrated. Actors can control the movements of monsters. This technology can make a more realistic virtual monster model.

7. Conclusion
The image design of characters is a new type of enterprise. In the foreign game industry, this technology has been developed to a very high level. Unfortunately, the image design system of our country is still in the development stage. Through our efforts, we believe that the future of virtual character design will be more simple and real.

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