Research on Computer Graphics Image Design Based on Visual Communication

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Abstract. Creativity and aesthetics are the focus of visual communication design. When communicating information and human-computer interaction, it is necessary to pay attention to the presentation of artistic aesthetics, so as to bring people a more comfortable and pleasant experience and a more reasonable interactive operation experience. With the support of current scientific and technological forces, more and more visual communication works have begun to use a large number of computer application technologies, which can use advanced pictures, video editors, or UI design and other front-end interface optimization technologies to magnify the role of various visual elements. This essay discusses its specific application methods.

Keywords: Visual Communication, Computer Graphics, Design

1. Introduction
Visual communication design is an important means of information transmission. In the current social form, it is mainly presented in the form of graphic design, poster design, packaging design, new media technology, design, etc. and it uses more advanced vision. Technology, while also using more visual elements on the basis of traditional media, these unique visual elements highlight the key information, provide the audience with more comfortable and intuitive visual information feedback, so that information and symbols can achieve content fusion And human-computer interaction. Therefore, it is particularly important to use computers to enhance its expressive power.

2. Graphic image design principles for visual communication
Visual communication design, that is, how to show the content and ideas we want to express to those who receive the information. Nowadays, there are more and more ways to communicate visually, but among so many ways, how can viewers better understand what we want to communicate, how to use plain language or physical movements, etc. Communicating the themes we need to express. These are all issues that designers must think about and topics that they need to spend time and energy on. In
order to solve these problems, designers must constantly update their thinking mode and continuously improve their innovative ability. In general, the following principles must be followed to innovate your own visual thinking.

2.1. Attaching importance to the visual center
In the process of searching for images, our vision will automatically look for content that matches our own thinking interests. For those images that do not have much interest, the vision will automatically filter them out, making them blurred. Such a process is the process of visual cognition. After the end of one process, vision will automatically transfer to another center of interest and start the next visual cognition process. The different visual cognition processes are intertwined, forming a visual process. The coordinate representation of the visual center is shown in the figure below.

![Coordinate Representation of the Visual Center](image)

**Figure 1.** Coordinate representation of the visual center

2.2. Grasp ratio and scale
The same is true for our visual thinking. Only the most suitable size can give people a pleasing feeling and not make the eyes tired. It also shows the importance of size to our vision. In general, size and proportion mainly refer to the relationship between the part and the whole. Only when the two are in harmony can we give people the most perfect psychological feeling[1]. And, only by grasping the relationship between the two, will the designer's content get more attention.

2.3. Control comparison and unification
For some things of different nature, we will unconsciously compare new things and understand the differences between them. Anything you see on the vision has different characteristics. For example, in terms of hue, it is generally divided into warm tones and cold tones. When we see various things in different tones, we will unconsciously change it. Combine it with other things, compare them and find out which work you most like. It can be said that in real life, we often use contrast in many places.

2.4 Focus on symmetry and equilibrium
The other is to achieve a balanced state when observing various things, try to be coordinated, uniform
and tidy as much as possible to give people a sense of beauty. In life, we often encounter such symmetrical things, such as animal wings, human body structures and the appearance of some mechanical equipment.

3. Computer graphics and image processing technology

3.1. Software support for interactive graphics technology

The drawing of interactive graphics must be coordinated with the software and hardware of the computer, rather than being achieved by a separate technology. Specifically, hardware devices to be used are the host and input and output devices, while the software includes the graphics system, application models and programs.

(1) Graphic system: As the key component of the system, it mainly includes graphic subroutines, which can provide a large number of graphics functions. At the same time, which driver do you choose for the output device to get the corresponding graphics? (2) Application: This part belongs to the foundation of the graphics system. It can obtain the data information specific objects based on the application model. At the same time, the data is processed and the graphics of object data information are generated in the graphics system. The above three parts are the main software support for interactive graphics processing technology. An example is shown below.

![Figure 2. An example of interactive graphics processing technology](image)

3.2. Computer graphics processing language

There are many types of computer graphics processing languages, such as DirectX, OpenGL, Java3D, etc. At present, most professional workers use OpenGL for writing 3D programs, because they can better realize graphics and images and for a large number of non-professionals. In terms of application of this technology, there are certain difficulties in many aspects[2]. In contrast, Java3D has strong performance in computer graphics processing, especially 3D graphics processing and Java is often seen in the design of computer software and the Internet. This technology is mainly developed and improved based on OpenGL. There are certain advantages in 3D graphics processing [3]. At the same time, Java3D is also an extension of higher-level object-oriented technology. It can efficiently process...
3D graphics data. It has higher convenience in the operation of adding or subtracting, rotating and panning a part of a graphic or a graphic. Process more diverse and rich 3D graphics. Of course, there is another very important reason for using the Java language in graphics processing because of its platform independence, because the problem handling varies between different operating platforms, so the JVM of each platform is different and the 3D designed by the Java language Graphics can be displayed directly in the browser, so Java3D can realize the advantages of running everywhere and can be run on all platforms, which makes it easier to use the latest stereo graphics acceleration technology.

4. Computer graphic image design method based on visual communication

4.1. Realizing the combination of multiple image styles
The primary function of computer image processing technology for computer graphic image design is to be able to achieve the combination of various style images. In computer graphic image design, the selection of images needs to be performed according to the design requirements. In image processing, images of various formats, such as screenshots and simple combined volume of photographic images, are often involved. Different images correspond to different visual effects. For photographic pictures, its realism and intuitiveness are obvious, it can have a good bring-in and it is most easily accepted by users. After the photographic image undergoes image processing, it can well meet the needs of computer graphics image design, thereby improving the user's browsing experience. Of course, in the design of computer graphics and images, it is easy to reduce the theme of a webpage by using only a single photographic image. This requires the use of corresponding image processing technology for image processing to rationalize the page layout[4].

4.2. Controlling the page image size
In the process of computer graphics image design, there are certain differences in the image sizes corresponding to different sources of image materials. This requires the use of computer image processing technology to control the size of the pictures on the page, thereby improving the browsing experience. However, in the control of the image size, the resolution of the image will change due to the size scaling. The combination of pictures of different resolutions is really not a good visual experience for the viewer. Therefore, in the control of image size, it is not simply cropping or stretching. Instead, more technical strategies need to be adopted, such as controlling the size of the image and the sharpness of the image and combining image processing technology to effectively achieve different resolution Rate matching between images, thereby improving the overall effect of the image in the web page[5].

4.3. Improving the expression ability of images in web pages
Different types of images have different expressive powers in computer graphic image design, so they will show different effects in the design. The application of image processing technology can effectively improve the expression ability of images in web pages, thereby helping designers to provide the corresponding publicity capabilities of web pages. In the design of computer graphics and images, displaying pictures in the form of a chart can better highlight the role of the image and improve the expression ability of the image. It can be seen that the use of different image processing
methods needs to be performed according to different scene settings, thereby improving the design effect of computer graphics and enhancing the viewer's visual experience, thereby guiding the viewer to obtain corresponding information and achieving computer graphics image design[6].

5. Conclusion
Computer graphics and image technology innovation can continuously improve the level of visual communication design and promote the good development of visual communication design in China. In this process, it is necessary to innovate from the aspects of reverse thinking, divergent thinking and associative thinking in the visual thinking mode, to improve the consistency between the visual thinking mode and the development of the times and finally to achieve purpose.

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