Analysis of the Application Countermeasure of Virtual Reality Technology in the Vision Simulation System

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Abstract: Virtual technology is a computer simulation system based on new technology and visual technology to realize the creation and experience of virtual world. It belongs to the use of information technology computer system function for environmental simulation, and it uses the combination of multi-information fusion and 3D dynamic visual interaction and physical behavioral experience to build virtual and real scenes to make the entire environment reality. It lets users feel the real environment and interact with them. At present, the application of visual simulation system for virtual reality technology has been gradually popularized. This article first introduces the development of virtual reality technology, and briefly describes the specific characteristics of virtual display technology, and finally puts forward some countermeasures for the application of virtual display technology in the visual simulation system.

1.Introduction
Nowadays, with the rapid development of information technology, all kinds of electronic equipment and information terminal equipment have been widely used by people. Virtual reality technology has put forward the primary concept as early as the 1960s, virtual display technology gradually began to develop rapidly through continuous technological innovation and system innovation, its application is more extensive, including medicine, film and television entertainment, game experience, education and teaching, traffic design, building structure construction and so on. The technology brings rich experience and great changes to people's lives and improves people's living standards and gets more practical applications in the field of scientific and technological research. With the development of the times, the application of virtual technology in the visual simulation system is becoming more and more widespread, and it promotes the development of modern human technology and the level of experience.

2.the Intension and Characteristics of Virtual Reality Technology

2.1. the Intension of Virtual Reality Technology
From the combing and analysis of the development process of virtual reality technology, the research of virtual reality technology is divided into four main stages:

First is the initial stage of the concept of thought. In the late 1920s, Edward Link, a designer at an aircraft training center, came up with the concept of a pilot training simulator. In the mid-1950s, another expert, Morton Heilig, developed a multi-channel simulation experience system with a true input experience. The second stage was a demonstration of the invention of the helmet stereoscopic display with tracker equipment by Ivan Sutherlan with the publication of "Final Reality" in the mid-1960s, successfully bringing the stereoscopic virtual impact to people's eyes, rather than the...
virtual image of the display in a confined space. In the third stage of development, the concept of virtual reality technology is coming into being. In fact, Virtual environment visual display was developed and invented by NASA Research Center in the United States for the exploration of Mars from the late 1970s to the mid-1980s. In the same year, VPL also carried out the first concept summary and proposal of virtual reality technology. The fourth stage is from the 1990s to the modern. In this stage, virtual reality wood comb and 3D graphics generation technology realize fusion application, and combine the use of multi-sensor interaction technology and high-resolution display technology.

The virtual reality is the combination of virtual and reality. In theory, virtual reality technology is a computer simulation system that can create and experience virtual worlds, using computers to generate an analog environment in which users can be immersed. Virtual reality technology is the use of real-life data, through electronic signals generated by computer technology, it is combined with a variety of output devices to make it can be felt by people phenomenon, these phenomena can be real objects in reality, can also be invisible to the naked eye of the material through three-dimensional models to show.

2.2. the Specific Characteristics of Virtual Reality Technology
Virtual reality technology contains four main features. One is the presence simulation of the real experience, the users can achieve the degree of operability and extremely natural feedback level of the objects in the environment in the simulation environment and get a very real touch and presence experience. The second is the multi-perceptive feature. This feature mainly refers to the use of computer technology to achieve visual perception, auditory perception, tactile perception, motion perception. The most advanced technology even includes the perception experience of taste, smell perception and so on, is the most advanced level of virtual technology. The third is the characteristic of autonomy. This feature is mainly based on the computer multi-perceptual characteristics and sense of existence to achieve the virtual environment of objects according to the real world physics law action behavior of a high degree of unity and simulation of the design and implementation. The fourth is the characteristics of interactivity. This feature mainly refers to the virtual environment scene for its simulated objects to achieve operability and information feedback level construction, to maximize the user-virtual environment interaction experience[1].

Figure 1: Virtual reality technology use vision VR glasses and hand sensors to realize the experience of existential, multi-perceptive, interactive.

Virtual reality technology use vision VR glasses and hand sensors and other devices to bring a variety of sensory experiences such as vision, hearing, touch, and more for users.

3. the Application Countermeasure of Virtual Reality Technology in the Vision Simulation System
3.1. Development Process of Virtual Reality Technology
The main key technologies in the current development process of virtual reality technology include simulation and modeling of dynamic environments, 3D graphics generation technology, stereoscopic reality, sensor technology, system tool development and system integration technology. Dynamic
environment modeling technology, three-dimensional reality and sensor technology and system integration technology are more important and critical. Dynamic environment modeling simulation technology is the core technology content of virtual reality technology, the purpose of which is to acquire the three-dimensional data of the real world environment, and to construct the virtual environment model according to this. The 3D graphics generation technology is the real-time generation of the graphics that establish the various environmental elements in the virtual reality environment. Therefore, the setting of its functional standards is high\(^2\). Stereoscopic reality and sensor technology are mainly applied on the basis of the realization of the interactive function of reality, which can meet the real feeling demand of mechanics and haptic sensing devices, and also improve the tracking accuracy and the improvement and expansion of the tracking range of virtual reality devices. The key factor of virtual reality technology is the environment scene and object chosen for simulation, and the choice of the correct and suitable application object can greatly improve the efficiency of production and the simulation quality of virtual environment. Finally is the system integration technology, in fact, realize the information and virtual model and multi-perceptibility, information synchronization, model calibration technology, data conversion technology, data management model, recognition and synthesis technology integration, and improve the construction of virtual reality model authenticity\(^3\).

3.2. Functional Application of Virtual Reality Technology

At present, the development and functional application of virtual reality technology is very advanced and wide. For example: the VPL company develops the sensory gloves and HMD, and applies it in modern society, the development of its software and the research of the system never stopped. Virtual reality technology is no longer new in people's lives, Many gaming companies, medical institutions, education and teaching and other industries have realized the application of virtual display technology, the effect is more and more detailed and accurate to bring people a more realistic feeling.

4. Analysis of Cases

Taking the application of visual simulation system in the popular film and television shooting technology and entertainment in the society as an example, the functional application of virtual reality technology is expounded. At present, people have realized the development and application of the game world to bring users into virtual reality scenes. People bring themselves into the game with sensor helmets, gloves, etc. and complete the task settings in the game through various actions, game players feel in it and use the device to generate a strong sense of immersion and participation. Under the influence of surround vision and sound and light touch simulator, the subconscious person is in the real world for himself, reaching the person in the room while the heart is in the feeling of traveling all over the world\(^4\).

Taking the application of visual simulation system of virtual reality technology in psychology as an example. In 1994, The Rothbaum group designs a virtual reality system to treat flight terror, and the system successfully cures a female flight horror patient. The team also compared virtual reality exposure therapy with traditional therapies, and found that virtual reality is comparable to traditional exposure therapy and can be maintained over the long term. The Muhlberger group divided thirty flight horror patients randomly into virtual reality and relaxation therapy groups, both of which improved after treatment, but the virtual reality group was significantly better than the control group. Similar studies have shown that virtual reality does have a good therapeutic effect. In this process, the application of virtual reality technology in the visual simulation system has brought the construction and interactive, multi-perception features and existential sense to a high level and application level, and the gap between human and information processing system has been completely overcome\(^5\).

5. Conclusion

With the development of information technology and virtual reality technology, the application prospect of virtual reality is more and more extensive, and it also makes itself one of the most effective...
information processing tools. Its application in the military field, medical field, construction field, film and television entertainment, game experience, education and teaching, traffic design and other fields has been not limited to simulation training, but to achieve a higher dimension and effect of the promotion of the application, it also has made a higher contribution to the development of human civilization and technological upgrading.

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