Analysis on the Application of Computer Virtual Reality Technology Environment Design

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Abstract. As a new computer technology integrating a variety of science and technology, computer virtual reality has been involved in many research and application fields. Virtual reality technology is a hot technology that has been paid close attention in recent years. It is developing rapidly because it can bring users Many conveniences are currently highly regarded by the industry and are recognized as one of the important development disciplines of the 21st century and one of the important technologies that affect people's lives. This paper introduces the important characteristics of immersiveness, interactivity and imagination. This paper analyzes the application of virtual technology in environmental design, and analyzes the development and application of virtual reality in other fields.

Introduction

Virtual reality technology is a collection of widely used computer science and simulation technologies [1-2]. Virtual reality technology compiles and digitizes the digital language stored inside the computer so that the user can perceive it [3]. Correspondingly, the computer's sensing device can also recognize and respond to the signals output by the user [4-7]. This interaction between the user and the computer is called three-dimensional interaction, and such interaction can be carried out simultaneously in many aspects. Virtual reality technology is a low-cost, high-efficiency technology that can be applied to different fields and has a wide range of applications. Space [8-11]. It is slowly maturing, moving towards intelligent technology, and people will become more and more aware of it. It will make the traditional industry undergo earth-shaking changes. I believe that it will be widely distributed in the near future. [12-14]. Virtual reality technology is still in its infancy, and there are still many things that need to be improved [15]. Even so, it has brought a new research direction to the development and progress of science and technology, and will have a long-term and profound impact on human civilization, and will play an important and irreplaceable role in various fields [16-19].

Characteristics of Computer Virtual Reality

Virtual reality is a high-level human-computer interaction technology that effectively simulates human beings' visual, auditory, tactile and other behaviors in the natural environment. It creates a virtual reality space for participants in a simulated way. This virtual reality space is a three-dimensional image world that reflects the interaction of physical objects with the environment in real time. It enables participants to have realistic experiences of perceived behaviors such as sight, hearing, touch, and smell, so that participants can directly participate in and explore the role and changes of the environment in which virtual objects are located, allowing participants to feel as if they are in the real world.Produce immersion, interactivity and conceiving, which is known as the three "I" characteristics (Figure 1).
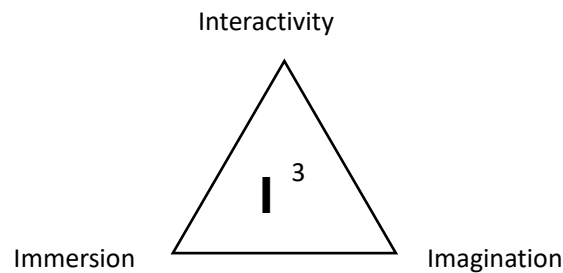
Interactivity

Immersion   Imagination

I^3

Figure. 1 3 "I" feature map1.1 immersion

Immersion.
Can freely observe the virtual reality environment in 360 degrees. The general computer graphics can provide two-dimensional or three-dimensional partial graphics, or a fixed path set in advance. People must combine the local graphics and imagine each other to imagine a specific "imagination space." The "imagination space" gives people a feeling of one-sided, partial, not specific, different, and incomplete. Virtual reality can provide people with a complete and unified virtual reality environment. When people wear a head-mounted display and enter a virtual reality environment, they can look up at the sky in a virtual reality environment, look down at the grass, and observe the overall environment around them. Participants can interact with computers in a natural and direct way,machine data interaction; using the immersive function of virtual reality, the user temporarily isolates the current real environment and puts it into the virtual reality environment, thereby obtaining the real experience of people in the virtual reality environment.

Interactivity.
Among computer virtual reality technologies, interactivity is another feature of the technology, which mainly refers to the degree of user operability of objects within the simulated environment, and the natural degree of feedback from the environment to the environment. The human-computer interaction interface existing in virtual reality technology can be said to be far beyond the traditional modes such as keyboard and mouse. It can rely on more complex sensor devices such as digital gloves and helmets, as well as language input in 3D interactive technology, ldentification and other technologies to effectively achieve human-computer interaction.

Imagination.
Imagination means that the virtual reality environment can immerse people and acquire new knowledge, enhance sensibility and rational understanding, thereby deepening concepts and sprouting new ideas, further inspiring people's creative thinking. In the traditional engineering design scene, users have the comprehensive needs of "past needs" and "current design". Designing finished products is more of an imagination in the minds of engineers. Through virtual reality, users can easily get a "future finished product" preview, which can better imagine the current engineering design.

The Application of Computer Reality Virtual Technology in the Environment

The Necessity of Virtual Reality Technology in Environmental Design and Application.
With the development of science and technology, people's production and lifestyle have changed to some extent, and they are facing more opportunities for development. In particular, the development of computer science and technology has greatly facilitated people's production and life. In the field of environmental design, the emergence and application of virtual reality technology based on computer science and technology has brought new development opportunities. Compared with traditional environmental design, virtual reality technology has unparalleled advantages. It breaks through the limitations of traditional thinking, fully exploits the potential of environmental design, and has a very broad development prospect. Using virtual reality rendering technology, sunshine

analysis, and interactivity can bring strong and realistic visual effects to teachers and students, and get an immersive experience. Through its data interface, the project data can be obtained at any time in the real-time virtual environment, which is convenient for urban planning, garden design, road traffic, real estate approval, and urban management. It is beneficial for teachers and students to assist design and program review for various planning and design solutions.

Advantages of Virtual Reality Technology in Environmental Design and Application.

Make up for the shortcomings in environmental design. In the process of environmental design, due to limitations in funding, site, equipment, etc., some design work cannot be carried out smoothly, and the actual effect of environmental design cannot be guaranteed. The application of virtual reality technology just makes up for this shortcoming. Designers can stay at home and rely on the computer to complete the concrete scene. This not only reduces the cost, but also enriches the sense of sexuality and deepens the environment. Understand and master the design content; avoid potential threats from actual operations. In the environmental design, some design work will be potentially dangerous. In the past, the actual operation was replaced by TV recording, which avoids the harm to the human body, but also makes the designer unable to obtain perceptual knowledge. The application of virtual reality technology can enable designers to carry out various operations and experiments in a virtual experimental environment, such as landscape architecture experiments, which can eliminate the safety hazards in actual construction; landscape decoration can avoid consideration of incomplete Material waste; using virtual reality eye movement technology, we can do real-time dynamic review in the post-evaluation of environmental design, can observe the internal and external structure of any angle of the environment, and simultaneously synchronize feedback through eye movement and virtual reality interaction to understand the observer to the environment. The real experience.

Prospects of Virtual Reality Technology in Environmental Design and Application.

With the rapid development of computer technology, the types of modeling techniques and software are increasingly rich, and the degree of reduction in the real world is getting higher and higher. At present, the main modeling methods used in the environmental design profession are manual modeling methods using computer modeling software for modeling; combining 3D scanners, 360-degree cameras, etc. to measure and scan real-world digital measurement methods; using physical simulation Mathematical calculations are used to model the digital generation method. After the virtual model is built, in order to make the model more realistic, the model should be rendered and imported into a virtual reality device for display, so that the user can feel immersive. At present, mature rendering technology can truly restore light, physical motion trajectory, complex textures, natural scenes, etc., and can also use image generation technology to display and simulate the real world. With the development of digital technology, the expression of other perceptions such as sound, touch, taste and so on is also developing and progressing. In the foreseeable future, virtual reality virtual reality technology can achieve all-round simulation and restoration of the real environment. The charm of virtual reality technology in the field of environmental design professional is that it breaks through the display form of 3D simulation space, allowing users to enter the virtual world of design through virtual reality devices, realize the interaction with the design virtual world, and produce real immersion. . It is this interaction process with virtual space that can effectively solve many existing design and expression problems in the field of environmental design.

Application of Virtual Reality in Other Fields

Application of Virtual Technology in Education.

With the development of science and technology and the progress of society, the fields and methods of student learning have also undergone tremendous changes. From the initial blackboard chalk to the current multimedia teaching, from the initial imagination to the present, none of them are present. Does not reflect the power of technology. Modern students prefer to experience and learn in an immersive way. The lively classroom is more popular. The development of virtual reality technology has promoted the reform of education methods. Virtual reality technology can clearly

express the three-dimensional space, enabling learners to interact directly and naturally with various objects in the virtual environment. And through a variety of forms to participate in the evolution of the event, in order to obtain maximum freedom to control and operate the entire environment. This virtual learning and training environment that presents multi-dimensional information will provide learners with the most intuitive and effective way to master a new knowledge and new skills, which not only increases the interest of students, but also improves learning efficiency and teaching results. Do more with less.

Virtual Technology in Entertainment Applications.

Entertainment is one of the main directions of virtual technology today and has been very effective, including game entertainment. Virtual reality technology is used in many aspects of entertainment, especially in games. Games that use virtual reality technology can provide players with a more realistic gaming experience that truly integrates into the gaming environment. In addition, virtual reality technology can also be used in movies, so that viewers can not only see a plane when viewing, but also observe the environment in the movie 360 degrees to achieve the immersive feeling.

Application of Virtual Technology in the Field of Architecture.

In the field of architecture, virtual reality has unique advantages in the architectural design process. In the architectural design, through the virtual reality technology, the designer's ideas can be displayed in real time. The difference from the traditional display method is that the virtual reality technology can provide more realistic three-dimensional graphics, and can also provide a variety of information such as sound, smell, touch, etc., to facilitate the designer's work. In addition, through a comprehensive display of design results, the review experts and customers can have a more realistic feeling of the design, so as to propose more specific and more targeted opinions. Therefore, the architectural design work using virtual reality technology can more easily obtain high-quality results, reduce the designer's work intensity, improve work efficiency, reduce design cycle, and improve customer satisfaction. In the field of architectural decoration, virtual reality can play a very large role. Compared with the usual use of multiple floor plans to display design effects, the use of virtual reality technology to display more comprehensive and proactive. In short, after adopting virtual reality, the relationship between the designer and the customer has changed from a static relationship to a dynamic relationship that can be fed back in real time.

Conclusions

The virtual world is created by human beings, how big the heart is, and how big the world will be. Virtual reality will develop better and better in the future society, not only in the field of environmental design and education, entertainment, architecture, but also in the military field.For example, in the military field, virtual reality also has a lot of room for development, virtual Reality technology can make military exercises and strategic research more convenient. The virtual battlefield allows soldiers to carry out simulation training without physical damage. The future world is full of unknown and fascinating colors, and the flourishing development of virtual reality technology will definitely change people's lives.

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