Research on Application of Virtual Reality Technology in Architectural Space Design

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ABSTRACT: The virtual roaming is a kind of active consciousness of media publicity carrier, either participants or the operator will put all attention to the content of the product, form is novel and beautiful. In this paper based on the Internet technology platform of virtual reality technology demonstration, analysis and application of virtual reality technology in a new digital era building space design, and through the analysis of the theory of intellectual property and the social ethical order, predict the development and application of virtual reality technology in architecture design in the future.

1 VIRTUAL REALITY TECHNOLOGY AND INTERNET TECHNOLOGY DEVELOPMENT OVERVIEW

The so-called virtual reality (VR), also known as a realistic simulation of immersive multimedia or computer, refers to a kind of simulation environment by using computer to simulate the real system and create and experience the virtual world of the computer technology, the technology of artificial visual, auditory, tactile and gustatory sensory experience, users can immerse themselves into the environment in simple terms, the virtual reality technology is to realize the simulation of the real world, on the one hand it requires a computer to do a vivid description of the real world, on the other hand to give users feel personally on the scene in effect. Therefore, to achieve a high degree of intelligence depends not only on the computer software of virtual reality technology, but also depends on the hardware technology the interactive experience to enhance.

The concept of virtual reality technology early in 1965 has been officially described, then in Massachusetts, and Institute of Lincoln Laboratory and NASA and the Department of defense for the units on behalf of scientific research and public sector began the development of virtual reality hardware and virtual 3D imaging technology.

In the 1990s, computer software system perfect and hardware technology rapid development, based on large sets of data, voice and image real-time animation making possible, which the game industry first introduced virtual reality technology, which representative was undoubtedly the most famous Nintendo launched the visual boy head wearing type game machine and the Wii game suite and so on. In addition, the digital map technology company launched the 3D map is also simulated reality technology currently the most common application form.

In the 21st century, the virtual reality technology, software technology has great development, which mainly include the modeling of dynamic environment, real-time 3D graphics generation technology, stereo display and sensor technology, application system development tools upgrade replacement.

However, the virtual reality technology application from achieving human senses full immersion virtual world is still a large distance, mainly lies in the decline in the virtual reality hardware synchronization ability is insufficient, resulting in the computer simulation of sensory experience. In a virtual reality game, for example, current technology still exist following problems: view too narrow, not convenient tracking feedback information except the head of other parts of the body, low resolution graphics CPU processing capability is insufficient and the hardware delay cause human discomfort.

New digital technology concept, which has affected the people know from music to all aspects of health. At the same time, does not change the nature of the building, still limited in practical accommodation. Virtual reality technology era has come, and it will thus change the relationship between people and space in the future.

The real world is composed of multiple expression of different cultural, economic and geographical location will have its own model.
Social media created with a fictional form of, films, such as, electronic games, advertising, image symbols such as integrated complex real world. These special effects is a part of people's life, the virtual reality technology is one of them. They in real life and not alone of, but everywhere related. In order to play its role in the expanding stage, urgently need to development of new building skills.

At the height of the development of the Internet era, from architecture to digital, a real and virtual space. Compared to the real environment, more emphasis on the experience gained in the virtual electronic. But in fact, this electronic virtual space is rarely accepted and valuable experience for development potential. Imagine a real space use, such as library. In the sudden e-book throughout the world at the same time, it has been transformed into the virtual space. Too many things in the rapid development today disappeared. Clearly, in-depth understanding of architectural factors, such as scale, proportion, light, material and various aspects of the combination of digital virtual technology can be developed. Virtual reality technology can bring beyond flat screen browsing of the Internet era.

2 VIRTUAL REALITY ROAMING PRODUCT ADVANTAGE

If the digital experience evolution is the personal center from 2D screens in 3D, then it cannot be denied that the architects in the pivotal role. Digital world architects need, as the architect also need to the digital world. Building development is still full of potential.

Space exhibit is a virtual roaming in the form of construction roaming, it integrated the virtual roaming the multidimensional, and three-dimensional animation technology, Jing Wei technology through the automatic of the construction of internal and external structure, and living culture through the light and sound beauty, etc., is building developers and vendors are effective tools in 3D virtual reality technology as the core, the integration of digital media technology, 3D interactive roaming, audio and video and other means, the future of real estate residential environment, the model room, easily show the customer before. In the most direct way to the future owners to fully show the overall property and details, so that the owners have a immersive feeling.

The product advantage of virtual roaming is mainly reflected in the following aspects:

Virtual roaming an active consciousness of media publicity carrier, whether it is operator or participants, will put all attention to the content of the product, form is novel and beautiful, people generally do not exclude, let a person take the initiative to accept. Such as Fig. 1.

Virtual roaming platform and technique of making the difference in traditional tools and processes, using a lot of time to study art, resources, independent function of resources, to create a high-quality projects, resource independence avoid the repeated use of the model, to avoid the emergence of the popular, similar style sense of sleep.

The traditional technique of activated to equipped with required to spend funds into tools, and is not a passive decorations, creating more opportunities, realize this platform brings more other outlets and way.

In terms of the nature of the project, the quality of virtual roaming, high degree of freedom, strong sense of experience, and to bring grades, impressive.

Virtual roaming no time frame lock concept, the difference and effect diagram or the animation of the frame or the number of seconds or content box lock form, each line of each coordinate and the angle of view can freely control.

To large tender scheme demonstration, virtual roaming to more persuasive than the ppt documents or drawings, the design is need separation and analysis, virtual roaming let design at a glance, the difference in the old and reflects the grade reflects the design units of the pursuit and follow-up force.

As the design of the nature of the unit, the project can be used to demonstrate the use of a higher configuration notebook, through such a way to contact customers than with an animation or a file to attract people and more specific and more professional.

Is the purposes of the platform, virtual roaming are already covered by the roaming and effect drawing function, effect drawing can be embedded, can also direct capture, roaming function changes high. According to the requirement to add enough quantity and time of the lens, the cost is very low.

With the accelerated pace of urbanization in China, architectural walkthrough will undoubtedly become one of now and in the future for the most popular industry. It can not only realize the future architecture and cities in the short term, but also get more high social and economic benefits.

In virtual reality, architects and the group. In the real construction, can create a hold a considerable number of shelters; in virtual digital building, its purpose is for the electronic properties of the group to create the environment, and it is almost unlimited capacity. In the understanding of the space, people
are interested to create an offer from learning, for pure entertainment places.

Need to wait for a new way of life. Building digital download space can be integrated a series of personal rework operation, some controversy or user and partner together in unusual circumstances. In such a situation, like Convrge or second life platform, is challenge to traditional architectural significance. In this way, in which provide human factors is urgently needed in the VR experts call for reservations.

Building studio staffs to understand the use of VR tools to free as a natural extension to the real environment of the value of two forms of virtual and real are present, with the emotional work experience to enrich people's daily life.

3 THE SIGNIFICANCE AND FUNCTION OF VIRTUAL REALITY IN ARCHITECTURAL DESIGN

Accept challenges to the construction industry. New hardware and software platform is on the rise, they can make the person at the scene, so also known as virtual reality or VR, accompanied by the gesture model, or by computer capture hand movements and translate them into design information. Both industry and trade cooperation can enable designers will design visualization, virtual in full size three-dimensional space, in this space, design with intuitive hand and body movement, the impact of architectural practice is huge.

First of all, this means that you need to create a new interface and customized workflow. Keyboard and mouse in the design process in the secondary position. Secondly, is also one of the most important is, in my opinion), the augmented reality (AR) and virtual reality (VR) platforms need to digital design is labor's hand.

Although virtual reality technology advantage to promote the construction of practice is relatively easy to imagine, but the combination of 3D environment and use hand to design ability is a bit difficult. However, like wearable sensors can be as complex, or as simple as flat-panel computer screen new tools can capture design information from the free hand movements. It can through this new gesture modeling tool to create the architecture form and space, similar to the work of the sculptor.

By applying the gesture modeling in VR and ar that trigger an understanding proportion of drawings of the pattern of change is possible. 3D model is a dynamic in the virtual space can be better utilized. This means that designers can see their three-dimensional model, rather than a virtual 3D objects, but as a fully realized the virtual construction.

In this way, it makes the drawing (modeling) and build itself cannot be separated. Draw a line is no longer represent a surface, but the surface itself. In its essence, this way to make painting beyond from the Renaissance to the end of the 20th century has been used by architects of the scalar control to represent the spatial method. On the contrary, it makes the painting into a one to one training.

Virtual reality (VR) will forever change the building, every company needs to change the decision. It may sound too exaggerated, but compared to virtual reality can do, 3D images and computer has the advantages are eclipsed.

In many ways, computer generated images is an upgrade version of the hand-painted rendering image and virtual reality can model to enhance the experience to a new level. You can use existing design software to import the 3D model, and to a new, incredible way to experience.

Virtual reality can also provide the analogy real light rendering effect, so as to save you time. Customers can turn on the lights, the lights are turned off, to feel the effect of light setting of space. For customers, this interaction is a pleasant experience, and can quickly perceive the aspects.

Real scene simulation. Virtual reality can simulate the lighting effect, but for office buildings and even the airport of building body, how can it? At this point, the virtual reality technology can show for designers of real objects, and the performance of its and environmental interaction.

For example, you can by characters will be placed in the construction of fuzzy parts and test with the help of your set of sign system needs time to escape, and to test the emergency exit system is reasonable. Computer models can indeed show people how to get out of the house, but cannot show the feelings of people in the face of environmental psychology. Under the help of this in-depth analysis, the building of the future will be safer, friendly. This is just the virtual reality technology in the construction field simulation using the tip of the iceberg.

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4 THE IMPACT OF THE VIRTUAL REALITY TECHNOLOGY ON THE ORIGINAL THEORY OF INTELLECTUAL PROPERTY AND THE FORMATION OF SOCIAL ETHICS ORDER

Computer simulation of reality and immersive experience, are two important aspects of the virtual reality technology, and the person (or user) whether feel is realistic simulation fidelity and immersion experience is related to virtual reality technology research and development success of the standard in the use of related technologies. In the past people only through the keyboard. Place the mouse with the digital computer system, through virtual reality technology can simulate reality through sensor and information environment interact; past people only from the computer system of the external observation information data processing results in the virtual reality system can be immersed into the computer system created by the environment, "the subjective experience personally on the scene."

Obviously, this central role in the development of virtual reality technology, determines the user interface with the virtual reality system of each big company Face will be as realistic as possible to simulate the real world, so that its users can get immersive experience.

Virtual reality technology such as far as possible simulate the real trends, posed a challenge to the intellectual property protection of computer user interface rules, that is, how the virtual reality system in the public or common knowledge to distinguish?

The people still consider simulated real environment may belong to the public domain, realize the interactive mode is also likely to be very limited sensory and computer hardware equipment. If you ignore this feature, it is likely to present some common elements research in virtual reality system given the improper protection; and if this interaction is too much emphasize the virtual reality simulation of the real and limited characteristics, and may lead to innovative elements of user interface may be due to the expression does not belong to the copyright law or does not meet the requirements of new original requirements or patent law of excluded protection. At the same time, the simulation may be a unique identification of the specific user interface is reduced, which may make efforts to protect the protection of the virtual reality system by trademark or trade dress is reduced.

Virtual technology development and application, at least in two aspects of the traditional social ethics order form the impact, namely the third party should how to deal with the machine to interact with people, and whether it should be implemented into a realistic simulation technology of human-computer interaction and immersion and set boundaries.

In the age of the Internet of things, people will not only be able to interact with the computer hardware equipment of direct contact, can convert any networked device variable as an extension of the will and sense. In this case, legal tradition and logical order of "objects" become an extension of the people, then the matter is supposed to be enjoy a body of people enjoy the right of personality, and virtual reality interactive service independent third party and with existing what rights and obligations?

Human beings and virtual reality technology relationship is worth rethinking. On the one hand, the virtual reality technology through human-computer interaction, making the machine becomes an extension of human senses. This not only makes personal information can easily access to virtual reality application provider, will also to the public total privacy protection poses a great threat. Google glasses into the market, this blinking glasses you can take pictures of glasses caused people about security and privacy ethics discussion, in foreign countries currently has many places banned Google glasses.

On the other hand, virtual reality technology has the human sensory immersion in virtual environment, so that people can have a perception and imagination in the virtual environment. If the virtual reality technology enough to simulate real, it is likely to normal social life and mental health of health problems, such as being too addicted to the virtual space, make the person produce is unable to distinguish between the virtual and real mental illness, etc. Therefore, virtual reality technology in
the process of development, the extent of human-computer interaction and human immersion is worth considering.

Virtual reality technology, the essence is to people as connecting the nodes and the core of everything, for the realization of the will of the people and the subjective feelings of service. The development of virtual reality technology will further realize the cross-border integration of information and communication technology, people-oriented information communication hardware and software intensive equipment R & D, is time to achieve human-computer interaction mode change it. Virtual reality technology to achieve the simulation reality and sensory immersion function will greatly enhance the people's imagination and subjective construction ability. At the same time, with the construction of Internet of things, virtual reality technology is likely to pass information and communication technologies to further extend human sensory capabilities.

In the process of the development of virtual reality technology, focus on technical innovation, according to the characteristics of the virtual reality technology further development related intellectual property rights protection system, so neither for misappropriation of public domain knowledge and through legal protection to maintain its development momentum. And in deal with virtual reality technology to the traditional social ethics order of the impact and challenge and need to deal well with the relationships between as the extension of human senses, the computer and the third person, and solve human itself due to the application of distress.

5 THE APPLICATION OF VIRTUAL REALITY TECHNOLOGY IN THE ARCHITECTURAL DESIGN IN THE FUTURE

VR and AR technology continues to improve, has begun to change people's daily life, the occurrence of these changes is likely to will slowly destroy and reconstruct the existing social structure, even the first tier cities to drastic role.

Therefore AR/VR means don't need to live in a big city, everyday commuting to the office, don't waste time, living costs can be reduced; do not need to living in a big city to enjoy the convenience of living conditions, because the household business more convenient, more flexible and cheaper, experience more good; do not need to living in a big city in order to ensure that we are from all my friends close to facilitate go out to play, because in VR can have fun with each other and exchange; do not need to living in a big city to get good medical resources, anyway telemedicine and virtual surgery can get!

A new concept - "virtual reality" one click upload Sketch Up model to smart design platform, can generate virtual reality roaming, then the application of virtual reality technology in architecture in the future have embodied in what? The application of virtual reality technology in architecture design in the future with the advent of the information age, computer technology in the field of construction industry in China was also widely used. "Virtual reality" is more popular in today's era of integrated computer technology, through the virtual reality technology can change the traditional design method, which also for architectural design and the CAAD domain is proposed.

The characteristics of this technology, can better make this technology in the construction industry has been widely used. This paper expatiates on the technology in the future application in architectural design. Keywords: virtual reality technology; architectural design; building information technology; building auxiliary design of virtual reality technology is a three-dimensional environment through computer simulation the simulation of the real environment, so as to generate a realistic audio-visual integration of special virtual environment. Through simulation, the user can also feel a spatial experience in other field. Nowadays, virtual reality technology has scientific experiments and theoretical analysis, the three closely together to become an important means of human exploration of the objective world. Virtual environment system includes computer graphics processing system, image processing and pattern recognition, artificial intelligence, speech and audio processing, network technology and sensor technology, and other systems.

The advantages of virtual technology that can provide a large number within a certain time range of users, many information resources, such as through the virtual technology to design the building, you can enter some specified construction parameters, including size, material, light and other data, then the system will appear the corresponding virtual reality through these. Virtual feedback, also can timely adjust the real-time data, this is also one of its major features. Virtual reality can be seen as a natural result of development of 3D computer modeling, virtual reality tools and techniques through the interaction and mixed type, so it can be used in the construction of our country, and is a the ideal performance of the media.

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