

Computer Virtual Reality Key Technology Research

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Abstract: Computer virtual reality technology has developed rapidly, in the context of the "Internet +" era, has been widely used in many fields, but in the actual development process, it is also necessary to comprehensively analyse the key technologies, so as to lay a foundation for the subsequent application. Based on this, this paper analyses the key points of virtual reality technology from the computer, and on the basis of clear corresponding key technical content, combined with practical application cases to clarify the specific application methods for reference.

Keywords: Computer; Virtual Reality Technology; Model Construction; Simulation Analysis

Introduction

Computer virtual reality technology can create a three-dimensional, three-dimensional, simulation world with the assistance of many modern information equipment, this immersive, interactive, real-time virtual world can be in many industries to assist human work. Not only that, with the combination of computer virtual reality technology and other technologies, it can create a multi-dimensional information space with a better experience. At this stage, strengthening the analysis of the key technologies of computer virtual reality can further expand the scope of its application and lay the foundation for the stable development of the national society.

1. Computer virtual reality key points

From the point of view of computer virtual reality technology, the key points can include the following aspects:

Computer virtual reality technology can be transformed through the collection of real environmental information to achieve the construction of the formation of a virtual simulation environment. By constructing the corresponding mathematical model, the space, elements and other factors are taken into account to draw a three-dimensional image, and then with the help of telemetry and other technologies in the computer, the corresponding image is added to make it more realistic. Time and space tracking is also achieved in the process of physical object virtualisation. The application of virtual reality technology in people's daily work and life is also becoming more and more widespread, for example, VR game experience, the experiencer can wear a game helmet, etc., to achieve human-computer interaction, and will be able to complete the actions required by the system, so as to enter a virtual world, with the help of an information sensor, so as to complete the connection between the person and the virtual environment ^[1]. In addition, audio and video tracking is also a key point in the physical virtualisation of computer virtual reality technology, which is an important part of 3D modelling and is directly related to the user's visual experience.

Computer virtual reality technology can achieve transformation through the constructed virtual environment information, assisting the real environment space construction. In virtual reality, the user can feel that the colour of the target has changed, and the colour is a kind of visual perception, and the user will be able to see the target through the helmet, virtual reality technology glasses and other devices, such as direct-view type and projection. This can also be used in virtual reality, as the three-dimensional reality technology is to process the presented image and then feed it back to the user, through a series of operations to enhance the actual experience of the user's effect. Currently, people mostly use the correlation transfer function for the representation of speech. For example, the common HRTF sound calculation method, which is based on the filtering principle, simulates the auricular sound effect, and ultimately achieves monaural positioning

[2]. During the sound effect production process, based on the localisation information of ITD, it is determined when the sound source arrives at the user's ear. And the sense of touch can better reflect the immersion of virtual reality, for example, by steering, it can make the user feel that their body is swaying from side to side.

To better implement and apply computer virtual reality technology, the first thing to do is to capture the user's intention, that is, through the computer to understand the user's needs and ideas, and input the relevant information into the computer, which in turn improves the computer capture technology, and then obtain the relevant design programme. Next is the photography of characters and environment, focusing on the facial features and appearance of characters, etc., and obtaining relevant information through these features. On this basis, the environment capture and rendering technology is used to achieve the creation of a real scene, and different objects are displayed in the virtual space. Computer virtual reality technology studies a dynamic mathematical modelling method to meet the needs of the virtual world, the use of computer-aided design and modelling technology, the information collected in detail, on this basis, the use of computer information technology, combined with the actual situation in the actual work, can generate 3D images.

2. Computer virtual reality key technology analysis

The construction of dynamic scenario modelling. Want to let the scene built by virtual reality to achieve the effect of simulation, it is necessary to use 3D stereo design software, its 3D modelling function mainly includes CAD software, MAYA software, etc., the comprehensive application of these 3D software, you can build a 3D stereoscopic scene model. To achieve a more realistic model, only built a static 3D scene model does not allow users to get a real experience, therefore, the need to then use dynamic environment modelling technology for rendering processing, so that the modelling scene can follow the user's perspective to move, change [3]. Dynamic simulation is one of the key technologies of computer virtual reality, obtaining three-dimensional information from the real world, and using special data acquisition equipment to match the three-dimensional information with the scene in the real world. The 3D data will be analysed, modeled, and dynamically simulated to establish the corresponding non-contact visual simulation to establish a virtual real world. The data volume of 3D image is huge, especially the motion image data, although the 3D image generation technology has been relatively mature, but to generate massive data still need the support of hardware equipment.

3D image technology. 3D display is a more common project content in the key technology of computer virtual reality. 3D projection technology as a new type of projection method, it is difficult to achieve high dynamic accuracy. To carry out 3D projection, it requires the corresponding equipment as a support, and then 3D projection, three-dimensional display must be able to change with the user's perspective. It is also necessary to apply perception techniques to the environment of computer simulation. For example, in the creation of computer 3D backgrounds, it is necessary to use perceptual technology to obtain the appropriate contextual information, or to obtain specific actions; and without the support of perceptual technology, it is not possible to create a virtual world with a sense of reality for the user. Relevant sensors can be directly installed on the device, through the sensors to collect the user's movement information, voice information, etc., can be issued commands, and let the virtual reality scene to follow the user's point of view or requirements to respond and change.

Computer-aided design. There is a DSP-based virtual reality technology in the key technology of computer virtual reality, and based on this model, a set of computer simulation system based on this model is constructed. Different types of simulation systems have different requirements for the development of simulation systems, and the closer the simulation system is to reality, the stricter the development of the simulation system is. In the core technology of computer virtual reality, system integration technology is also included, i.e., more information technology is integrated into one module to improve the application effect of computer virtual reality technology [4]. For example, in the establishment of virtual reality system, the application of data information technology is more, including the synchronisation technology of information, the conversion technology of data, the recognition technology of data information, synthesis technology and so on.

3. Computer virtual reality key technology application

3.1 Application in teaching.

With the continuous development of online education, the application of computer virtual reality technology in the

education and training industry enriches the form of education and training, provides learners with more diverse teaching methods, and has a significant impact on students' learning interest and learning effect. Some education and training projects use virtual reality technology, such as some experiments and construction courses teaching, can use virtual reality technology to provide learners with simulated scenarios, so that they can carry out experiments, simulated construction, and access to relevant data in a virtual situation [5].

3.2 Application in film and games.

Computer virtual reality technology is widely used in the game, film and television industry, and its profitability is also the strongest. In the game industry, the application of virtual reality technology to the game is mainly three-dimensional three-dimensional games, such as: three-dimensional physical games, three-dimensional scene experience games and so on. Now, many games have VR wearable devices, so users can play virtual reality scene games for leisure and entertainment in their own home, wearing an eye mask and taking a game controller. As far as the current market situation is concerned, the prospect of using computer virtual technology to develop games is even broader, coupled with the fervour of many teenagers for such virtual reality games, all of which are invariably driving the development of virtual reality technology. Moreover, with the development of VR technology in the film and television industry, its scope of application is also expanding.

Conclusion

In summary, the development of the application of computer virtual reality key technologies in many fields now requires the support of more technologies, including: dynamic environment modelling technology, three-dimensional image generation technology, stereoscopic display technology, sensor technology, application system development technology, system integration technology, etc., and further optimization is needed in the future in combination with the actual situation. At present, the use of key computer virtual reality technologies is very broad, and there is still a lot of room for future development, and it is necessary to continue to develop the relevant technical content.

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