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Research on Application of Virtual Reality Technology in 3D Animation Production

Wenbin He

Jilin Animation Institute, Changchun 130012, China

Abstract: Along with the rapid and high quality development of China's social economy, all walks of life in China have been given ample development opportunities, especially in the field of computer information technology, which has become one of the most rapid industries in the current era. Driven by the development of computer technology, China's 3D animation production technology is becoming more and more mature, and the production level is also rising, especially in virtual reality technology, 3D animation production has shown full charm. In recent years, due to people's interests and hobbies, many people have begun to invest in the production process of 3D animation. In the current era of increasingly developed network media, 3D animation production using virtual reality technology has been spread more and more widely, and the audience is also increasing. Therefore, this paper studies the application of virtual reality technology in 3D animation production, and provides relevant personnel with effective experience for reference.

Keywords: 3D animation production; Virtual reality technology; Applied research

Since the implementation of the innovation-driven development strategy in China, a good environment has been created for the development of science and technology in our country, and various advanced science and technology came into being, which has had a positive impact on people's life and social development in our country. The emergence of virtual reality technology has broken people's traditional cognition. With the development and popularization of virtual reality technology, the frequency of virtual reality in People's Daily life is becoming higher and higher, and it has played an important role in film and television entertainment industry, education industry, industrial production industry, medical research field, military aerospace and so on. Virtual reality technology is often referred to as VR technology, which is applied very frequently in 3D animation production and has significant effects. At present, the use of virtual reality technology to produce three-dimensional animation has become the mainstream of domestic and foreign animation works. The use of virtual reality technology has changed the expression of traditional animation in the past, brought a new visual experience to the audience, and let the audience experience a new animation form. Based on this, for China's 3D animation producers, the use of virtual reality technology to carry out 3D animation production is the trend of The Times, it is necessary to master the relevant application technology, and contribute more to the development of China's 3D animation.

1. Concept of virtual reality technology

Virtual reality technology (VR) combines 3D computer graphics technology, stereo technology, network transmission technology, wide-angle stereoscopic display technology, etc., mainly belongs to the category of computer technology. In the process of application of virtual reality technology, there must be corresponding scenes and conditions, but also need to match the corresponding equipment, such as virtual reality glasses, headphones, etc., and in the combination of projection equipment, make the physical space become more vivid and unreal, give people a real sensory experience, let people immerse in the immersive virtual environment, stimulate people's senses, and make people feel better. In addition, it can also realize the two-way communication of information under human-computer interaction. The emergence of virtual reality technology has had a great impact on people's life and working style [1].

2. The value of using virtual reality technology in 3D animation production

2.1 Realize the conversion from plane vision to stereo vision

In the process of animation production in the past, due to technical limitations, it can only be presented in the way of plane two

maintenance. For the audience, in the process of watching the animation, it is difficult to get a sense of space experience, and the overall audio-visual feeling is also relatively poor. Therefore, the use of virtual reality technology can form a physical space up and down, left and right, front and back in the design and production of animation space scenes, and build a more realistic space world. In this setting, the transformation from flat vision to stereoscopic vision is not only realized, but also brings unprecedented audio-visual experience to the audience, providing the audience with a three-dimensional animation work with excellent effect [2].

2.2 Break the traditional 3D animation production mode

In the production process of traditional animation, animators draw the moving images of animation one by one by hand, and use the camera to shoot the motion process of the picture, and then carry out the backplate washing, sample production and editing and other work in the post-production. Not only does it take a long time, but also the cost is relatively high, and the overall picture quality is relatively poor. Through the use of virtual reality technology, the original animation production mode can be broken, which can not only greatly improve the efficiency of animation production, improve the overall quality of animation production, and create better animation characters and scene effects.

3. Research on the application of virtual reality technology in 3D animation production

3.1 Application in 3D animation modeling

In the process of 3D animation production, modeling is a key process and the first step of 3D animation production, which will determine the overall quality of 3D animation works. Often, the focus is on modeling characters and Settings. Through the use of virtual reality technology, the modeling elements can be enriched in the modeling process, such as wind and grass, light and shadow effects, and enhance the interactive effect of animation modeling. Moreover, for role modeling, which is very important for 3D animation modeling, the application of virtual reality technology can enrich the facial muscle expressions of characters, improve the overall dynamic modeling effect, and make the characters more realistic. At the same time, with the help of virtual reality technology, the audience will feel the feeling of being in the scene and express the objective reality effect of three-dimensional animation. For example, in the process of action design of 3D animation characters, real actors are required to wear special clothes pasted with sensors and perform various actions according to the modeled actions, which is actually the collection of modeling information. In the case of building, natural landscape and other modeling factors, aerial photography is usually adopted and the physical effects obtained are projected into dynamic 3D scene models based on dynamic images [3].

3.2 Application in the process of 3D animation motion capture

Motion capture is the process of using virtual reality technology to collect various data. In the process of 3D animation production, shaping 3D model is only the basis of animation production, and the real purpose is to make the model “move” and “live”, so that the audience can show the dynamic effect of authenticity and flexibility when seeing 3D animation, just like seeing everyday people and things. Therefore, in the process of motion capture, it is necessary to capture the character’s expression, body movements, environmental changes, etc. The application of virtual reality technology can more quickly carry out motion capture, and form the corresponding action data, and then through the integration, analysis and processing of the data, so as to form a complete motion capture production. The application of virtual reality technology can optimize the physical effect of the animation model, show the stronger authenticity of the model, avoid the movement that violates the physical law, and reduce the loss of details [4].

3.3 Application in 3D animation adjustment

On the basis of 3D animation modeling and motion capture, it is necessary to adjust the animation. In the adjustment of 3D animation, each model element has been basically built into a complete data chain, and has the corresponding correlation, but through careful examination of these nodes, it is possible to find that there are some problems, must be corrected and optimized in time to avoid the phenomenon of picture performance errors. The use of virtual reality technology to adjust three-dimensional animation is mainly for the expression effect of the animation picture, the picture is constantly embellished to reduce some details of the defects and errors. In the adjustment process, the principle of linkage should be followed, and the correlation of the overall elements must be measured to ensure that the adjustment of a certain element will not affect other elements, so as to improve the integrity and naturalness of 3D animation production. With the support of virtual reality technology, various problems can be found in time and targeted corrections can be made to improve the naturalness and harmony of the animation picture [5].

Closing remarks

Under the background of the development of the new era, with the strong support of the state, China’s virtual reality technology and three-dimensional technology continue to develop, which has had a profound impact on China’s animation production industry.

The application of virtual reality technology in the 3D animation production process highlights the application value of technology, provides design ideas and design direction for 3D animation producers, better meets the actual needs of producers, and continuously improves the quality of 3D animation production. Therefore, for China's 3D animation production personnel, it is necessary to continue to learn advanced experience, master more cutting-edge virtual reality technology, and according to the actual requirements of 3D animation production, give full play to the advantages of virtual reality technology, and promote the high-quality sustainable development of China's 3D animation production.

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About the author:

Name: Wenbin He (born in 1989), gender: male, nationality: Mongolian, highest education (degree) : Bachelor, title: assistant, research direction: Film and television animation