Research on the Creation of Film and TV Works Based on Virtual Reality Technology

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Abstract: Film and television works are one of the art forms of television and film. They are a form of cultural heritage of a country and company in the new era. They have always been the souls that lead culture to prosperity and development. With the development of computer technology, film and television technology, especially the special effects technology of film and television, has achieved unprecedented development. Compared with traditional real film and television technology, the development of virtual reality technology provides a broader space for film and television creators. This article mainly analyzes the current domestic film and television animation production process based on the virtual reality profession, expounds the necessity of further strengthening the effective application of digital special effects, and launches a before-and-after comparison of "effective use" in combination with specific cases. Analyze the pros and cons of my country’s films, TV and advertising works. At present, my country has established corresponding research, production and teaching institutions at home and abroad. This article compares an interactive movie "The Lion King" based on virtual reality with movies with higher ratings on Douban, and finds that movies and TV works based on virtual reality technology are more popular with audiences.

Keywords: Film and television works, Virtual reality, Film and television animation production, Digital special effects

1. Introduction
In the field of film and television animation production industry, all the performance of visual and auditory effects [1-3], whether in traditional technology or modern realizable methods, are obtained by processing various materials as audio sources [4]. Using the current advanced equipment and performance technology can be faster, more convenient, comprehensive and reduce costs. Although China's film and television industry started relatively late [5], the state is very concerned about the value of the film and television industry in the cultural and creative industry, and has recognized its...
huge potential. Therefore, governments at all levels have issued a series of supporting policies for the development of film and television. In 2006, the State Council transmitted the "opinions on promoting the development of China's animation industry", and China's film and television industry got its first development on the road of industrialization [6].

Virtual reality technology has also become VR technology, which integrates computer, electronic information and simulation technology [7,8], simulates the basic realization of virtual environment, and provides a virtual reality technology in real life for people [9]. With the continuous development of social productivity and science and technology, virtual reality technology has also made great progress, virtual reality technology has been recognized by more and more people. Users can experience the most real feelings in the virtual reality world, so it is difficult to distinguish the authenticity of the simulation environment and the real world. In virtual reality, human hearing, vision, touch, taste, smell and all other sensory functions, due to the existence of virtual reality technology and more perception and interaction, it has a super simulation system to achieve human-computer interaction, so that people can operate and freely obtain the most favorite environmental feedback.

Film and television production are a technology that introduces new ideas and concepts to the audience through professional photography and visual processing technology, which combines more artistic elements [10]. Film and television production usually include film shooting, sound processing and special effects. Therefore, virtual reality technology and Internet of things technology will play an important role in film and television production. So, how to apply them to film and television production and establish new production methods and production models are of great significance to the development of China's film and television industry.

2. 3D Animation Technology and Virtual Reality Technology

2.1 Overview of 3D Animation Technology
Humans live in a world with 3D objects. In daily life, people's communication is mostly three-dimensional. Three-dimensional graphics produced three-dimensional animation technology, virtual reality technology and three-dimensional animation technology, making human life more colorful. 3D animation technology requires the use of a drawing program screen. Firstly, the original 3D data of computer scenes and characters are constructed by 3D animation technology, and then the images generated by computer animation are created. You can then add materials to the character and scene that correspond to the scene and character, as well as lights and cameras. 3D animation is generated by computer. Therefore, the data processing of 3D animation still needs computer to complete, so as to form 3D animation of digital characters. Through the media, this is 3D sport. The core of painting technology is to make different characters and outdoor sports form a virtual world through computer technology. All creative processes require computer technology to complete.

2.2 Overview of Virtual Reality Technology
Virtual reality technology is the use of computer technology to create and experience the virtual world. The creation of virtual reality technology and 3D animation needs computer technology. Virtual reality technology is the use of computers to form a virtual environment that people can experience and experience. Through the three-dimensional animation technology in virtual environment, people can perceive the content of the world and realize interpersonal relationship, interaction and virtual reality environment. It needs to complete a variety of auxiliary means, including multi-sensor, computer graphics, voice processing, pattern recognition, image processing, etc., which can give people the feeling of the real world. People can walk in virtual links. The innovative ideas and characteristics of virtual environment and virtual reality technology in the development of virtual reality technology are different concepts and characteristics of multimedia visualization technology. The concept of virtual reality technology is to let users immerse in virtual links, feel the content of virtual world, and the content of virtual world in virtual environment changes. Immersion in virtual environment means that
users can feel the real environment after entering the virtual environment, and feel that everything in the virtual environment is real, thus enhancing the creativity of users. In recent years, with the development of information technology, the development of virtual environment has become a hot topic. The United States and Britain are the most developed countries in virtual reality technology, and China is also vigorously developing virtual reality technology.

3. Experimental Ideas and Design

3.1 Experimental Ideas
In order to effectively analyze the application of VR technology in film and television art, a lot of literature about art and VR design and application are collected in various ways, as well as the methods of using film and television art works. Then, it summarizes the collected data and cases, improves the relevant research results, and forms the overall idea and research system of VR technology in film and television art.

3.2 Experimental Design
In the design, this paper adopts two forms: questionnaire survey and field interview. 423 college students were selected as the survey sample. Through the analysis of questionnaire survey and interview results, 220 students were divided into two groups. One is the experimental group of 110 students, VR technology film viewing, the other group is the control group of 110 students, is the traditional cinema 3D movie viewing. Then the students in the experimental group and the control group were investigated by questionnaire. The questionnaire is designed from four aspects: viewing effect, knowledge acquisition, historical understanding and impression evaluation. Firstly, the reliability and validity of the questionnaire results are analyzed. The specific evaluation system is shown in Table 1.

| Investigation factors          | The experimental group (%) | The control group (%) |
|-------------------------------|----------------------------|-----------------------|
| Viewing effect                | 99                         | 85                    |
| Knowledge acquisition         | 85                         | 80                    |
| Historical understanding      | 73                         | 72                    |
| Impression assessment         | 86                         | 78                    |

4. Discussion

4.1 Research and Analysis of Film and Television Works Based on Virtual Reality Technology
According to the process of film design, it is necessary to use some means to improve the image quality input into the virtual reality device. Therefore, the interaction design mainly adopts three-dimensional modeling. With the help of S3 Studio MAX software, by inputting Van Gogh's paintings, the specific 3D model is automatically generated, and the details are corrected professionally. The interactive design of content uses Photoshop CS6 software to correct the color of the 3D model, so as to ensure the quality of the image. The application of interaction design based on somatosensory is to increase the interaction with the audience, which is built on the platform of Internet of things. Among them, the screen-based interaction design uses infrared sensing and somatosensory recognition functions in the screen display, including mobile phones, tablet computers, television and other devices. The audience can watch different scenes in real time by moving the screen or touching and dragging.
The interactive films selected in this paper are compared between “The Lion King” and traditional films "Redemption of Shakes hen", "Farewell to the Concubine" and "Heartthrob". The evaluation and score of traditional films come from bean petals, a popular movie review website. At the same time, the control group was set to score four films, and the scoring method was through experts. The full score is 10, the higher the score indicates the better the effect of viewing the shadow, and the result of the view is shown in the following figure.

![Comparison of VR technology film and traditional film review](image)

**Figure 1.** Comparison of VR technology film and traditional film review

From the data in Figure 1, it can be seen that the Douban score of the movie "The Lion King" is 9.0 points, the Douban score of "Shocks hen’s Redemption" is 9.7 points, and the Douban score of "Farewell My Concubine" is 9.6, and the score of "Farewell" The Douban score is 9.1. The Douban scores of the movies "Shocks hen’s Redemption", "Farewell My Concubine" and "Pumped" are higher than those of "The Lion King". However, after the experts conducted the interactive movie of "The Lion King" with VR technology, the expert scoring showed a trend different from the Douban score. Experts gave the movie "The Lion King" a score of 9.5, the movie "Spokesmen’s Redemption" and the movie "Farewell My Concubine" both scored 9.0 points, and the movie "Farewell" scored 9.1 points. The above results show that the overall effect of film and television production based on virtual reality technology is better than the traditional movie viewing mode.

At the same time, we conducted a satisfaction survey on virtual reality film and television works with 100 college students. The movie played this time is still the interactive movie "The Lion King". After 100 college students watched it, it was analyzed based on the results of everyone's vote. The analysis result is shown in the figure below.
Figure 2. VR movie favorite survey

According to the data in Figure 2, 88% of people like to watch movies based on virtual reality, and only 4% don't. This may be because this movie focuses on the story of the young lion Simba's growth. The main set is computer-made, and these computer-made scenes are less realistic than the scenes in other movies. In terms of viewing, although some basic VR glasses have been used on mobile phones, they can only satisfy the curiosity of people who have not seen VR images. Once curiosity is satisfied, problems with low-end devices will arise, such as clarity, dizziness, and incorrect interaction. The above results show that the production of movies based on artificial intelligence is more likely to be loved by the public.

4.2 The Influence of Virtual Reality Technology on Film and Television Works

1. Innovation of the shooting mode

The position of traditional film photography equipment has strict requirements. The function of lighting, camera and other equipment determines the shooting angle of film, but it does not exceed the objective limit of shooting distance. The lens material is only one square inch in range, and other assistants need to avoid the camera from tilting completely. To avoid accidents and virtual reality, we can take panoramic photos in any corner, so we don't have to hide the camera intentionally. With virtual reality technology, even if the shooting angle is not good, we can seamlessly connect real information of different time and space through post production. For post-production, we only need to record in a virtual environment. By combining specific virtual scenes, post production can achieve the same effect. It not only reduces the cost, but also does not produce any visual logic deviation even if the actor does not have underwater photography. Therefore, the virtual reality technology innovation model is a technological breakthrough of modern film, which helps to enhance the visual logic effect.

2. Auxiliary design of color and light

In traditional film design, it is difficult to control the color of film lens without existence or light effect. For example, the two protagonists in the middle of the movie farewell to the concubine and Cheng butterfly can use light to highlight the character and background of the story. In this case, it is necessary to use multiple lens combination or more lighting equipment, so the introduction of augmented reality technology and digital production mode are more convenient. In the case of not
conducive to the increase of lighting equipment, color processing can be effectively carried out. Adjust saturation, color difference, contrast of light or temperature changes of different colors. For example, in a body scene, it's not easy to add lighting AIDS directly. In order to highlight the contrast effect of color, the virtual reality technology is added in the post production, and then the contrast effect of warm color and cold color is used to compare the main screen to attract the attention of the audience.

3. The space for the conception of controlling the view of shadow

The purpose of the concept of controlling the view of shadow is to control the view of incomplete visual information provided to the audience, so as to integrate with the development of the film. The method uses virtual reality technology to capture the special effect of augmented reality. In the new release of the new theater edition of the shell attack motor team, manufacturers retain only certain perspectives in some scenarios, while in other scenarios, they use the "black ban" to stimulate the imagination of the audience. This method can maximize the audience's vision and create different audience imagination. Mars rescue uses similar methods of setting up. The space suit helmet in front of the camera lens is the real camera angle, and the helmet is the virtual scene outside. When the shooting angle is highly consistent, the same perspective can be found, which plays an important role in highlighting the imagination characteristics.

5. Conclusions

With the continuous development of society and the continuous advancement of information technology, today's virtual world creation is becoming more and more realistic, and it is highly praised and used by users. This article believes that the full use of screenwriters' ideas and the comprehensive development of digital special effects research and other application fields as the film and television creation industry will bring better visual effects. In this paper, the interactive movie "The Lion King" is made to watch. Compared with the traditional film and television works, it brings a different viewing experience to the audience in terms of viewing effect, knowledge acquisition, historical understanding and impression evaluation. At the same time, people are fonder of movies based on virtual reality. Therefore, people can use virtual reality technology to produce film and television works, in this virtual environment, they can feel the content presented in the world, realize the interaction between people and the environment, and enrich people's lives. This artificial intelligence-based virtual reality and Internet of Things film and television production model has huge advantages and provides new research ideas for film and television production.

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