

Specific Application of Virtual Reality Technology in Film Production

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Keywords: Virtual reality technology; film production; specific application

Abstract: With the boost of science and technology, virtual reality technology is gradually mature, its application in the film and television industry to promote the development of film and television production in the direction of digitalization and information technology. Virtual reality technology can realize film and television special effects, bringing new visual experience and spiritual shock to audience, and enriching the content and picture sense of film and television works. Virtual reality technology is also the future development trend of film production, is the core technology to promote the modernization of the film and television industry, which requires more attention, update the film production concept and ideas, scientific application of virtual reality technology, so as to better serve the modernization of film production.

1. Introduction

Virtual reality is a new technology, which can provide opportunities and technical means for film production, effectively change the mode and concept of film production, and broaden the channels of film and television production. The technology is formed on the synthesis of several technologies such as computer network technology, digital technology, and image processing technology. With the development of science and technology, the film production mode has also changed from traditional live-action shooting to post-editing, and with the support of virtual reality technology, it also incorporates a variety of special effects technology, providing people with a new visual scene.

2. Overview of virtual reality technology

Virtual reality technology is to show various scenes in the real world through virtual scenes on a computer platform, so that people can get a multi-sensory experience and immerse themselves in the virtual world to see various objects and scenes that cannot be seen in real life. Virtual reality technology can interface the virtual world with the real world through special expressions such as language and gestures, providing people with a more humane and diverse sensory experience. In virtual reality, people can use specific devices to interact and communicate with other people or scenes, or browse information according to their own ideas, with certain immersive, autonomous and experiential characteristics. Virtual reality technology is also synthesized under a variety of modern technologies, which can provide audience with an interactive scenario in which information from multiple time and space and time are fused and interacted with under a computer simulation system, allowing users to capture realistic movements and actively interact with each other, thus strengthening the user's participation experience and giving special feelings to them.

3. Virtual reality in film production

3.1. Stereoscopic display technology

In order to make the movie picture and image more realistic and bring the audience a strong visual feeling, it is necessary to actively use 3D stereoscopic display virtual reality technology to strengthen the visual effect of the movie picture and bring the audience a certain visual aesthetic

sense. This technology as a new film production technology can provide the technical and material basis for film production. Because of the location distance of human vision, there will be visual differences in the process of watching movies, and these differences will lead to different images and graphics perception when the audience watches the movie, but because of the existence of such differences will also lead to the existence of a sense of space and three-dimensional sense. In this regard, in the film screen under the virtual reality technology, the audience can wear special glasses, immersed in the three-dimensional virtual image and the real world, the virtual world, etc. to interact and communicate, so as to see the usual unseen images, and ultimately strengthen the visual effect. There are two main approaches to film image formation based on virtual reality three-dimensional display technology: First, presenting the movie image in both eyes of the audience on the movie screen, requiring the user to wear special glasses to see it when the stereoscopic image and the virtual image are presented simultaneously. Second, the film screen and film images are displayed through a certain time and space distance, when the audience does not need to wear glasses and can directly watch with the naked eye ^[1].

3.2. 3D virtual sound technology

There are many virtual scenes in the movie screen, and the various sounds appearing in them need to be consistent with the information received by the audience in the real world, so that the audience can focus on the picture and automatically determine the sound in the movie screen when watching the movie. To effectively achieve these goals requires the use of a sound technology processing system that combines virtual and realistic sound. Through this 3D virtual sound technology allows the audience to judge the different sound sources and different character voices in the movie screen in a timely and effective manner. 3D virtual sound technology can automatically simulate various sounds in real life, and randomly capture various sound characteristics in real life, through recognition, processing, and transform them into specific notes, and under the relevant technology into the film screen summary, the audience can directly identify and receive information while watching the film. The technology can enhance the realism of the movie, the saturation of the picture, so that the audience can be fully immersed in the movie plot and feel the psychology and behavior of the characters' images in the movie. The use of this technology in filmmaking has several advantages: First, it brings a film-based task and event to the audience through sound transmission, prompting the audience to better interact with the film scenes and images. This kind of interaction is different from video which cannot realize real-time interaction, but it meets the audience's aesthetics and information receiving way, which makes the artistic concept and value of the film can be better conveyed, and provides technical experience for people to develop various interactive devices later. Second, it can prompt the environment and characters in the film images to fully interact and communicate through three-dimensional sound, so that the audience can better understand the content of the film, the characters' plot, and thus deeply analyze the value of film consciousness and aesthetic ideas. Third, three-dimensional virtual sound is not limited by time and space, which can more widely transmit information, enrich the content of virtual environment information, broaden the scope of film art performance, enrich the sense of scene dynamics, promote the film image more dynamic, more interesting, and ultimately give people a diverse visual experience. Sound can be combined with images to bring the audience a strong sense of visual impact ^[2].

3.3. Environmental modeling technology

The specific application of virtual reality technology in film production needs to focus on creating a realistic virtual reality scene. The creation of virtual reality scenes needs to rely on three-dimensional models to achieve, based on which virtual environments and virtual images are created. In this process, it is necessary to collect and process various environmental data and image attributes of people's real life, and combine the aesthetic tendency of the audience and market characteristics to finally create a virtual environment model with visual functions. In addition, virtual environment modeling technology is mainly applied in 3D stereoscopic film production, which can be reflected by a spectacular picture, especially various science fiction films and disaster

films, etc. These films are more realistic and ornamental with the support of virtual reality technology. Traditional film production is not required to use a variety of new technologies, and does not take into account the aesthetic needs of the audience, which requires the scientific application of virtual reality technology in the post-production of the film.

3.4. Virtual imaging technology

The American film *Star Wars* first applied virtual reality technology. Later on, there are more and more countries actively adopting various virtual image technologies in the production of film images and pictures, which enriches the content and form of films, strengthens the visual effects and breaks through the drawbacks of traditional film production technologies. Under the virtual reality technology, various digital technology, virtual technology, synthesis technology and special effects production are constantly changing, providing the audience with a variety of gorgeous and colorful virtual images, which is a major advantage that cannot be surpassed by traditional film production technology. The film screen based on virtual image technology involves many aspects of film creation, on-set shooting, post-production and editing, etc. It is virtually created in the pre-creation to affect the scene, visual, plot and other attributes through virtual image technology, and is constantly refined and improved. The narrative and storytelling can be enhanced before shooting and manufacturing, so as to strengthen the visual effect. In the process of specific shooting, only the image material needs to be processed, and a special camera is used to shoot and process it with the help of virtual image technology. Eventually, in post-production, the filmed video material can be synthesized and artistically processed virtually directly through virtual imaging technology, which ensures the best possible picture by adding some new elements through creative and free computer processing of the film ^[3].

4. Specific application of virtual reality technology in film production

4.1. Application of virtual reality technology in film image production

Virtual reality technology in the current application in the film image generation mainly includes three kinds of technology: first, the image formed all by virtual reality technology simulation, for example, people do not need to use a variety of materials or props to shoot in the process of film production, and do not need professional actors into the real scene to perform. Various images, scenes, character roles, etc. can be generated directly through virtual technology, and the staff only needs to simulate the synthesis through computer software and programs. Film works produced under this technology can also be very vivid. For example, some animated movies have some scenes completed by virtual reality technology, in which the characters and scenes are virtually constructed and loved by audiences. Second, the integration of real scenes and virtual reality technology, such as the film *Jungle Game*, some ancient creatures were synthesized with virtual reality technology, and by the integration of real scenes, so that these virtual synthetic creatures can be active in the real scene, so as to bring the audience a special feeling. Thirdly, when shooting life phenomenon films, virtual reality technology can be used to draw on various restrictive issues under traditional film production technology, so as to enrich the scene effect, enhance the realism and interactivity of the scene, and effectively improve the quality of film works. For example, in *The Wandering Earth*, some space creatures and scenes were synthesized through virtual reality technology so as to enrich the movie content and bring the audience a more realistic feeling, prompting the film production technology to be increasingly mature and have solved the problem of incompleteness under traditional technology.

4.2. Application of virtual reality technology in film characterization

The application of virtual reality technology in film production can restore real life scenes, simulate different character images and characteristics, and portray changes in the expressions of characters, reproduce psychological activities, and effectively complete the expressions of movements that cannot be completed by real actors. Based on the above advantages, many directors

have adopted virtual reality technology to portray multiple characters. In the specific production process of the film, the staff also need to think about how to use virtual reality technology to create characters with a three-dimensional and new sense. For example, in the science fiction movie *Avatar*, most of the characters' images and characteristics were presented through virtual reality technology, which restored the characters' images for people in a realistic way and effectively promoted the development of film production technology. Based on the virtual reality technology, people can effectively simulate the ideal characters that do not exist in real life, thus providing a wide development space and unlimited possibilities for film characterization ^[4].

4.3. Application of virtual reality technology in film atmosphere creation

Based on the current status of film production, the roles in film works are decreasing, the actors appearing on the screen are decreasing, and various scenes are increasing. In order to enrich the scenery, directors actively use virtual reality technology to create three-dimensional scenery, so as to shape the unique atmosphere of the film. The application of virtual reality technology in the three-dimensional scenery is not only to enhance the realistic effect, more importantly, to enrich the content of the story, to promote a smoother articulation of the story, which can promote the development of the film plot, enrich the film to convey a variety of emotional colors, so that the audience can feel the value concept, mood and emotional colors conveyed by the film, and effectively improve the artistic impact and expression of the film. The creation of film atmosphere with virtual reality allows viewers to immerse themselves in the film and enjoy the images, making the film a true classic. The creation of atmosphere with virtual reality technology can be achieved in the following methods.

First, set up suspense. Virtual reality technology differs from traditional film technology in that it can effectively reserve suspense, enhance the sense of suspense, provide an immersive and heart-wrenching sense of pressure, effectively solve the shortcomings of traditional film technology, improve film saturation, enhance the attractiveness and quality of the film, stimulate the curiosity of the audience, and innovate film production methods. Second, enhance the sense of crisis. With virtual reality technology, directors can simulate phenomena and scenes that do not exist in real life to enhance the sense of exaggeration of the film and allow people to feel the existence of various crises, thus strengthening the sense of the subject of the film. For example, the Korean film *Train to Busan*, *Rock Climbing*, the directors have adopted a variety of CG images, while some scenes are simulated synthetic, but with a strong sense of reality. Through this special effect, it can give people a sense of real panic and make them feel like they were right in the middle of it. Third, the sense of mystery. Directors can also use virtual reality technology to create a mysterious scene during the production of the film, to stimulate the audience's curiosity and increase the film's topicality and fervor, thus effectively improving the film's infectious power. For example, the American film *The Mummy* applied virtual reality technology to shape the image, and shaped a mysterious picture and scene, so that the audience can hold their breath and wait quietly throughout, creating a desire to explore. In summary, virtual reality technology is one of the indispensable technologies for film production at this stage and in the future ^[5].

5. Conclusion

In conclusion, virtual reality technology as a new technology has remarkable advantages and high technical content. Applying this technology in film production can effectively solve the shortcomings of traditional film production technology, enrich the scene content of the film, enrich the character features and role characteristics, and make the picture more stunning and spectacular, so as to enrich the sensory experience of the audience. Virtual reality technology can effectively connect the virtual world and the real world, prompting people to better interact and communicate with the scene, automatically simulating various scenes and characters, thereby strengthening the film image effect and promoting the development of the film and television industry.

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