Application and Development of Virtual Reality Technology in the Media Industry: Postprint

Authors: Tan Yinzi

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Abstract

The continuous advancement of science and technology, particularly the rapid development of network information technology, has ushered in a new round of technological revolution while simultaneously exerting tremendous impact on the media industry. Virtual reality technology, leveraging its series of application advantages, is being applied to traditional industries, providing new development pathways for this sector. This paper first expounds upon the connotation of virtual reality technology, subsequently analyzes its role in television program production, and finally explores its application and development trends in the media industry, aiming to provide some references for relevant research.

Full Text

Preamble

Virtual Reality Technology: Application and Development in the Media Industry

(Beijing Qiyi Century Technology Co., Ltd., Beijing 100000)

Abstract: With the continuous advancement of science and technology, particularly the rapid development of network information technology, a new round of technological revolution has emerged, bringing significant impact to the media industry. Virtual reality technology, leveraging its series of application advantages, has been applied to traditional industries, providing new development directions for these fields. This paper first elaborates on the connotation of virtual reality technology, then analyzes its role in television program production, and finally explores its application and development trends in the media industry, aiming to provide references for related research.

Keywords: virtual reality technology; network information technology; media industry; VR technology; AR technology

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Introduction

1.1 VR Technology

VR technology, also known as spiritual environment technology or artificial environment, is a computer simulation system formed by integrating multiple domain technologies such as simulation technology, sensor technology, human-computer interface technology, and multimedia technology. It can create and enable audiences to obtain experiences previously available only in the real world.[1] In other words, VR technology can immerse human perception into the virtual environment it constructs, generating a sense of physical presence.

1.2 AR Technology

AR technology, or Augmented Reality, also known as expanded reality, primarily refers to a technology that performs real-time calculation of camera image positioning and adds corresponding images to it. It mainly manifests as the seamless integration of real-world scene information with virtual environment information. AR technology establishes an interactive connection between virtual and reality, significantly enhancing spatial imagination and actual presentation effects, enabling imagined scenes and images to overlay and merge with the real world, thereby creating a new real scene. In recent years, AR technology has been widely applied in media, education, medical and other fields.

1.3 XR Technology

XR technology, or Extended Reality, refers to an environment formed by computer technology and wearable devices that combines the real world with the virtual world and enables human-computer interaction. As a collective term for AR, VR, MR and other forms, XR technology can achieve immersive experiences with seamless transition between the virtual world and the real world.[2]

2. The Role of Virtual Reality Technology in Television Program Production

With the rapid progress of science and technology, virtual reality technology has also achieved continuous development and has been increasingly widely applied

in the media industry.

2.1 Enhancing Television Program Competitiveness

Generally speaking, television program production is mostly based on television stations. In the actual development of television stations, in order to effectively improve television program quality, programs undergo corresponding packaging processing to ensure good ratings and create social hotspots, enabling television programs to present rich connotations during broadcast and further enhancing their competitiveness. Meanwhile, only by starting from the production level to enhance the visual realism and interactivity of television programs, and establishing coordinated relationships among visual, auditory and other sensory modalities, can the interest of television programs be improved and win broad audience recognition.[3] During this process, introducing virtual reality technology into television program production can achieve clearer presentation of program themes and connotations. For example, virtual studios based on virtual reality technology can effectively integrate virtual environments with real scenes, enrich spatial variations, and with the assistance of screens, lighting and other elements, provide better sensory experiences for audiences. In traditional television program production, scene arrangement is often affected by various external factors such as weather, while virtual reality technology can effectively compensate for these shortcomings, improving production efficiency while reducing costs, thereby significantly enhancing television program competitiveness.

2.2 Meeting Audience Psychological Needs

As a mass communication medium, television primarily achieves functions such as news dissemination, cultural entertainment, and information services. Regarding the psychological needs of television audiences, these mainly include entertainment needs, knowledge acquisition needs, and interactive communication needs. By applying virtual reality technology to television program production, the visual impact of television program images can be effectively enhanced, further improving audience visual experiences and meeting entertainment needs. Simultaneously, virtual reality technology can process abstract theories and digital information in an intuitive and visual manner, providing effective convenience for audiences to receive information disseminated by television programs and meeting their knowledge acquisition needs.[4] Additionally, most audiences often have varying degrees of expression desire after receiving television program information. With the support of virtual reality technology, closer connections between television programs and audiences can be established, providing reliable communication platforms for audiences to express their viewpoints, thereby meeting interactive communication needs.

2.3 Enhancing Television Program Commercial Value

In actual development, the television industry has high dependence on advertisers. Therefore, during television program production, various advertisements

from different advertisers are often implanted. With the rapid development of network information technology, the development and promotion of new media has brought tremendous impact to the television industry. On one hand, it has diverted a large number of young audiences from television programs; on the other hand, it has significantly reduced advertising revenue, which serves as the pillar of television industry income, causing great adverse impact on the commercial value of television programs. With the continuous development of science and technology, applying virtual reality technology to television program production can effectively enhance television program image expressiveness, optimize previous advertising communication models, not only help advertisers obtain more considerable profits in their business development, but also enhance the commercial value of television programs.

3. Application of Virtual Reality Technology in the Media Industry

3.1 Application of VR Technology in Sports Events

In recent years, China' s sports industry has developed rapidly, with numerous sports events emerging. In addition to traditional sports event filming, various sports event organizers and sports platforms have attempted to introduce VR technology for filming and live broadcasting. The application of VR technology in sports events has brought a brand-new visual experience to audiences. Although VR technology is still in the development stage and far less mature than traditional television filming and live broadcasting in terms of technical maturity and operational experience, this does not affect the manifestation of its application advantages in sports events. First, regarding VR filming equipment. Conventional sports event filming can choose from a wide variety of cameras, and can reasonably deploy various focal length lenses, cameras and camera positions according to the actual characteristics of the event. Combined with camera position switching and lens zooming, the entire event and close-ups of athletes can be effectively captured.[5] Due to technical limitations, VR cameras are equipped with wide-angle lenses and cannot achieve lens zooming. In other words, it is difficult to bring distant subjects closer to the lens. To address this, some filming teams have introduced 1-2 conventional camera position images into the VR panoramic picture and set up picture-in-picture functions in panoramic live broadcast videos to meet audience needs for detail viewing. With the support of conventional camera positions and utilizing the panoramic presentation characteristics of VR, the screening and switching of conventional filming close-up images can be achieved, along with replaying various wonderful pictures, thereby effectively meeting the diverse needs of audiences watching sports events. Second, regarding VR game commentary and animation effects. Game commentary and animation effects are important issues that need to be addressed in VR event filming and live broadcasting. Game commentary can be resolved through the audio signals of on-site commentators or television event hosts. Animation effects such as event scores and motion trajectories on the

field can be presented in real-time in the picture using pre-made animation templates. Therefore, VR sports event filming and live broadcasting should combine its achievable "immersive" viewing experience with the advantages of traditional television filming and live broadcasting, such as event commentary, integration of various statistical data presentations, to promote the coordinated development of both.

3.3 Application of XR Technology in Entertainment Galas

Compared with offline live performances that create atmosphere through lighting, stage, bands and other elements, online entertainment galas have relatively insufficient live atmosphere. To effectively enhance audience sensory experiences, XR technology has become an important choice for online live entertainment galas. Compared with previous online and offline performances, in terms of content, the introduction of XR technology makes stage performances particularly emphasize the presentation of visual arts, enabling audiences to receive strong impact from the stage in a short time. Currently, the combination of online live performances and XR technology is mainly reflected in two aspects: on one hand, establishing a fully virtual environment where performers perform against a green screen background, then using technical means to transform the green screen background into pre-designed virtual visual scenes. On the other hand, in real performance scenes, combining produced images with real images to achieve overlay visual effects. In recent years, XR technology has continuously matured and has been increasingly widely applied in entertainment galas. For example, in the 2021 Spring Festival Gala, numerous attempts were made in visual performance and technological innovation. AI+VR naked-eye 3D studio technology and stage effects achieved through "cloud" technology brought audiences unique visual experiences. When Jay Chou performed "Mojito," the first impression for audiences was like watching Jay Chou' s MV. Jay Chou driving a pink car on screen as if traveling around the world was made possible by the introduction of XR technology, which facilitated the effective combination of real people, props and virtual scenes. Another example is the THE9 "Virtual City" immersive virtual concert launched by iQIYI Cloud Performance in March 2021. Supported by XR technology and film-grade LED realistic virtual technology, a multi-dimensional virtual city was displayed on stage, while also integrating real-time AR bullet comments, 100-person large-screen connection and a series of other interactive features, presenting fans with a wonderful audio-visual feast. Chief Director Tan Yinzi stated that this online concert was largely different from offline concerts. XR technology allowed the presentation boundaries of the concert to be infinitely extended. Because it was not constrained by venue conditions or installation space, the production team could fully utilize imagination and "build cities" on stage.

4. Development Trends of Virtual Reality Technology in the Media Industry

With the development and application of virtual reality technology, its development trends in the media industry mainly manifest as follows: First, blurred boundaries of the media industry. The rapid progress of virtual reality technology, 5G and other scientific technologies has promoted the substantial development of the media industry and brought many new experiences to people. At the same time, virtual reality technology has also promoted the blurring development of media industry boundaries, which is an important issue that media industry practitioners need to pay attention to. In the traditional media era, the boundaries of the media industry were relatively clear and fixed, with specialized thresholds such as technology, equipment and capital. With the continuous development of today' s society, the media industry constantly faces external impacts in content output and media products. A large number of talents and technologies have gradually been diverted to other fields. From this perspective, the rapid development of new media has largely transformed the media structure of the traditional media era. The general audience is no longer just information receivers, and media no longer just plays the role of information publishers. The relationship between the two has become increasingly close.[6] Interactive experiences continuously impact the information publishing advantages of traditional media, and people have thus obtained more information initiative. They can publish various types of content through network platforms according to their own needs. Therefore, the content productivity of the media industry will be further affected. The application of virtual reality technology also reflects the urgency of reform and innovation in the media industry. Therefore, the media industry should follow the pace of the times, continuously optimize communication content, expand communication channels, and promote its own sustainable and healthy development. Second, optimizing news content. The top priority of virtual reality technology is to provide audiences with better sensory experiences, enabling audiences to receive information from different perspectives. Therefore, attention should be paid to applying virtual reality technology to meet diverse audience needs. With the continuous integration and development of virtual reality technology and the media industry, a series of problems have gradually emerged, including being formalistic and lacking effective attention to the essence of news content. Therefore, when practically applying virtual reality technology, the media industry must coordinate the relationship between technology and news content. Avoid allowing virtual reality technology to overshadow news content, thereby violating the original intention of news communication. Third, optimizing the spiritual guidance of virtual reality technology for people. Virtual reality technology demonstrates outstanding technological characteristics. Its human-computer interaction features can fully mobilize people' s physical senses, enabling them to obtain unprecedented immersive experiences. During this process, some people are very likely to lose themselves and develop ideas of escaping reality, causing people to become immersed in the virtual world and unable to extricate themselves. Therefore, the

optimization design of virtual reality technology must be promoted to ensure it can provide healthy and positive spiritual guidance for people.

In summary, virtual reality technology is of great significance to the media industry. It can not only point out new development directions for the media industry but also provide important impetus for its development. Although virtual reality technology is still in the development stage at present, with the continuous development of science and technology, its application in the media industry will inevitably become increasingly mature, bringing increasingly high-quality experiences to people. This undoubtedly also poses great challenges to the development and transformation of the media industry. In view of this, media industry practitioners must explore and research how to more effectively realize the application of virtual reality technology to truly promote the sustainable development of the media industry.

References

[1] Yu Xianping. Research on the Correlation and Application of Virtual Reality Technology in the News Industry [J]. China Media Technology, 2018(5): 118-119.

[2] Cai Huiwen, Han Fan, Chen Xi. Application and Future Prospects of Virtual Reality Technology [J]. Digital Communication World, 2017(7): 194.

[3] Steed A, Friston S, Lopez M M, et al. An "In the Wild" experiment on presence and embodiment using consumer virtual reality equipment[J]. IEEE Transactions on Visualization and Computer Graphics, 2016, 22(4).

[4] Yu Hongwei. Brief Discussion on the Application of Virtual Reality Technology in Television Programs [J]. Science and Technology Innovation Herald, 2019(20): 152-153.

[5] Zhao Yizhe. Application and Future Development of Virtual Reality Technology in the Media Industry [J]. Grand View (Forum), 2020(5): 72-73.

[6] Shi Pengming. Current Status and Development Trends of VR Virtual Reality Technology in China [J]. Electronic Technology & Software Engineering, 2019(13): 148.

Author Information

Tan Yinzi (1986-), female, Shenzhen, Guangdong, Master' s degree, Research direction: News Media.

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Note: Figure translations are in progress. See original paper for figures.