Panoramic Communication and Integrated Application of VR News in the Era of Artificial Intelligence: Postprint

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Abstract

In the era of artificial intelligence, advancements in communication technology have driven innovation in media technology, transformed the traditional media landscape, and delivered entirely new sensory experiences. VR technology, or Virtual Reality technology (Virtual Reality), as an immersive and interactive computer-simulated environment, generates a profound sense of presence for audiences. The novel communication model of "VR+News" has garnered widespread attention and application within the media industry. This paper explores the panoramic communication and convergent application of VR news, analyzing the challenges it faces and its future development.

Full Text

Preamble

Title: Panoramic Communication and Convergent Application of VR News in the Artificial Intelligence Era

Abstract: In the era of artificial intelligence, advances in communication technology have driven innovation in media technology, transforming the traditional media landscape and delivering entirely new sensory experiences. Virtual Reality (VR) technology—an immersive, interactive computer-simulated environment—enables audiences to experience a strong sense of presence. The emerging communication model of "VR + News" has attracted widespread attention and application in the media industry. This paper explores the panoramic communication and convergent application of VR news, analyzing the challenges it faces and its future development.

Keywords: VR news; VR technology; panoramic communication; convergent application; innovation

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1. VR News

The concept of VR was first introduced in the 1980s by Jaron Lanier, founder of VPL Company, referring to a computer system designed to build virtual simulation worlds that generate 3D visual effects through simulated interactive design. Through this system, audiences enter a virtual simulation world and interact with its elements through their own behavioral responses, bringing real psychological behaviors completely into the 3D virtual world and creating a strong sense of immersion.

In recent years, with the vigorous development of artificial intelligence technology, the integration of VR virtual reality technology with news reporting and production has become a major trend in the media industry, yet neither academia nor the industry has established a unified standard or conceptual definition for VR news. Since 2014, some news organizations domestically and internationally have begun experimenting with applying VR technology to news production and reporting. VR news has been well-received by audiences since its emergence due to its emphasis on immersive experiences. In 2016, VR technology began to be more widely applied in news reporting, attracting significant attention. During China' s 2016 National Two Sessions, VR news coverage allowed audiences to widely experience this technology in news reporting for the first time, making 2016 known as the "Year of VR." Since then, VR news has received increasing attention. In VR news scenarios, audiences can fully reconstruct event locations, breaking through temporal and spatial limitations to truly experience everything about news events. News reporting emphasizes authenticity and timeliness, with every event in reports needing to conform to objective reality. VR virtual reality technology emphasizes experience, interactivity, immersion, and intuitiveness, providing audiences with authentic on-site feelings that make traditional rigid news reporting more dynamic, bringing tremendous transformation to the technical model domain. VR technology strives to simulate the most authentic on-site environments, creating a powerful sense of realism. From this perspective, the combination of VR technology and news reporting aims to approach facts and better present the true circumstances of events, bringing audiences closer to the facts themselves when watching VR news. It is not difficult to imagine that with the rapid development of VR application technology today, its widespread application in news production and reporting will have a significant impact on the development of the media industry.

2. Panoramic Production and Dissemination of VR News

2.1 Collection of Raw News Materials

Immersive VR news emphasizes panoramic and holographic experiences, making panoramic scene shooting an indispensable condition during production. When shooting VR news, 360° panoramic cameras are typically used to capture the scene where news events occur, the main news figures, and the complete process of news events. Simultaneously, ambient sound and audio from the scene must be collected and recorded comprehensively. Since news emphasizes objectivity and on-site reconstruction, all details must be presented completely during pre-production shooting, with dynamic impacts captured comprehensively to facilitate later virtual modeling. It should be noted that 360° panoramic cameras need to be moved holistically during shooting, creating a stereoscopic image effect that allows audiences to move freely for a panoramic VR news experience.

2.2 Virtual Reality Scene Construction and Panoramic Production

The key step in VR news production lies in combining normally shot news events with virtual reality technology, requiring the construction of virtual environments based on materials shot in the previous phase. In this process, news can be given three-dimensional perspective, reflecting the panoramic documentation of VR news. Virtual reality scene construction can compensate for missing material during news shooting, presenting news events through techniques such as VR cameras combined with computer image simulation and stitching. Panoramic production accurately restores news scenes, providing objective representation of news events, enhancing the sense of presence and experience in virtual reality, and creating narrative scenes with authentic objectivity and impactful participation. During VR news production, producers must treat interactive news scenes objectively. Although all news materials, audio, and images come from on-site shooting, producers may consciously select and purposefully process news event scenes based on their own subjective judgments and personal preferences to better highlight reporting themes, all of which do not conform to VR news production standards. While new technologies bring richer immersive experiences, one-sided pursuit of technical expression effects at the expense of real objectivity will cause tremendous damage to media authority and credibility.

2.3 Immersive Experience of News Events Through VR Equipment

VR news experiences also require VR equipment. Internationally, devices such as HTC Vive, SteamVR, Oculus, and Xinglun PC are leading VR equipment. These devices use head-mounted displays to isolate human vision and hearing from the outside world, placing the body in a closed state. Well-produced VR news has a strong sense of experience. With the use of VR equipment, it can mobilize audiences' full engagement and guide them to produce a sense of being personally on the scene. At this point, VR news generates a strong sense of immersion, participation, and interaction.

3. Integrated Development and Application of VR News

3.1 Integrated Application of VR News in Breaking News Reporting

Suddenness and timeliness are particularly emphasized in breaking news events. If journalists fail to reach the first scene for various reasons, VR technology can reconstruct the news scene of sudden events and rebuild the original appearance of news events. For audiences, merely emphasizing the authenticity and timeliness of VR news is far from sufficient; they also need on-site experience and participation, as well as feedback between their own experience and virtual technology. When reporting breaking events or war news, VR news demonstrates unique advantages and achieves better communication effects. New York Times editor Pirog commented on the physical and mental experience brought by VR news: "At this time, the audience has a strong sense of being personally on the scene. They are like one of the members, scared and then relaxed because of safety. At such times, language is not needed."

3.2 Multi-Scene Fusion Application in In-Depth Reporting, Enhancing Panoramic Effects

VR news is not merely a combination of video, text, and sound, and differs significantly from traditional television news reporting. The application of VR technology completes the perfect combination of virtual and reality, breaking the limitations of traditional television news, allowing audiences to feel as if they are conversing with news figures, truly restoring the scene and the original appearance of news events, bringing audiences a brand-new experience. Due to its long production cycle, VR news is very suitable for in-depth reporting that requires high scene documentation and panoramic recording of real events, achieving multi-scene representation and application. In-depth reporting requires tracking and recording, and such news is not limited to single scenes but rather involves multiple scene combinations to construct panoramic, multi-scene three-dimensional dynamic simulation environments, achieving panoramic reproduction of in-depth reporting.

3.3 VR News Content Highlights Details and Enhances Participation

VR news content requirements are very high. Due to technical and other limitations, VR news is not suitable for all news types, so many factors must be considered in content selection. At present, excellent VR news works are very scarce, and product life cycles are short. VR news involves long production times and substantial human and material resources investment, yet most of these VR news pieces are one-time reports without significant sensational effects, which is largely related to VR news content. Many VR news pieces one-sidedly pursue technical presentation while neglecting news content. Some VR news works even have serious disconnects between technology and content, which also constitute poor VR news works. This reversal of priorities deserves attention from the media industry. As media professionals, we should focus on

news content itself, truly achieving content supremacy in news reporting. VR technology only allows audiences to authentically participate in news situations; what truly immerses them is the attractiveness of news content to audiences. Professor Sun Zhenhu from the School of Television and Journalism at Communication University of China pointed out: "VR news production requires more rationality in topic selection, not blindly pursuing technical special effects, but attaching great importance to the novelty and depth of content."

3.4 VR News Emphasizes Immersive Interaction, with More Diverse and Rich Human-Computer Interaction

In the Internet era, research on immersion theory increasingly tends toward human-computer interaction. The key advancement of VR technology is whether humans and environments can interact directly, which is the most important link in immersive experience and an important factor in people' s authentic judgment of virtual environments. The virtual scenes constructed by VR news are not merely simulations of real scene images but also incorporate interactive modes between humans and virtual scenes into the design. The addition of audience actions during the experience further integrates humans with the virtual environment. Virtual reality technology makes audiences believe that the virtual world before them is real. VR news users are no longer "outsiders" but "on-site witnesses" of news events, and may even become the "center" of news events. Watching VR news generally requires VR glasses or helmets, and the use of these devices makes the virtual world more real, human-computer interaction more diverse and rich, and also accelerates the speed of audience feedback to communicators. Some scholars point out: "In the virtual world, audiences are not stationary. They can use their hands to grab objects and feel the sensation of holding things. This is not only an authentic user experience but also can feedback audience behavior in a timely manner. However, in traditional communication methods, text and images cannot enable audiences to react and feedback quickly."

3.5 Market Application of VR News

In China, VR news is still in the exploration and development stage. On September 3, 2015, during the grand parade ceremony, People's Daily "Central Kitchen" first introduced VR equipment to comprehensively display the wonderful moments of the parade scene, drawing people' s attention to this advanced technology. In the 2016 Two Sessions coverage, media such as CCTV and Xinhua News Agency attempted to use VR news reporting methods, which was the initial attempt of VR news in the media industry and received widespread praise. In October 2016, when CCTV broadcasted the launch of Shenzhou-11 spacecraft live, it used VR and AR technology in the studio to allow audiences to experience the various components of the simulated spacecraft through TV screens. These are typical examples of VR technology adoption in the media field.

At present, VR news production is much more difficult than traditional video

news, and audiences also need to invest costs in the reception process. With the accelerating pace of social development, people' s demand for fragmented experiences is increasing. If it requires significant time and monetary investment, most people would not choose to experience it. If the industry overly pursues technological innovation and breakthroughs in VR news, it will neglect the positioning needs of the media market.

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