Development Trends of Virtual Reality and New Media in the Era of Artificial Intelligence: Post-print

Authors:

Date: 2023-10-08T00:00:00+00:00

Abstract

From the "Year of VR" to the "capital winter," recent industry practices demonstrate that the integration of VR/AR and artificial intelligence has become a key focus for technology companies and media institutions worldwide. Research by domestic and international organizations illustrates this trend: JD.com's PCL Lab has explored deep neural networks (DNN) and optical character recognition (OCR); Tencent's YouTu Lab has investigated facial detection, facial feature positioning, and image underst…

Full Text

Development Trends of Virtual Reality and New Media in the Age of Artificial Intelligence

By Editorial Department

On September 21, the China Electronics Society's Cable Television Integrated Information Technology Branch held its membership day event in Hebei Province. The meeting, focused on strengthening technical exchange and discussion, featured a keynote speech titled "Virtual Reality + New Media: Innovation, Ecology and Practice" by Professor Cao Sansheng, Vice Dean of the New Media Research Institute at Communication University of China, on the topic of VR and artificial intelligence. Attendees included Zhou Zhiqiang, Secretary-General of the Science and Technology Committee of the National Radio and Television Administration; Chen Zhijiao, Senior Advisor to the committee and former Director of the Science and Technology Department; Xie Shenghe, Chairman of the China Federation of IT Journalists; and Yang Zhen, Vice Chairman and Secretary-General of the same federation.

Professor Cao Sansheng observed that all technologies face various problems in their early development stages, much like the birth of print media driven by printing and papermaking technologies, or the fear that accompanied the early days of the internet. This underlying fear of science and technology is difficult to avoid and even somewhat universal, as people's apprehension about the unknown, unfamiliarity, and disruptive nature of new technologies tends to be amplified by our limited cognition and established thinking patterns. In these early stages, challenges such as content scarcity, dizziness during use, and expensive equipment have persisted. However, as the technology matures, VR is emerging as a breakthrough medium beyond television screens and books, representing the most promising new media form today.

From the "Year of VR" to the "capital winter," recent industry practices demonstrate that the integration of VR/AR and artificial intelligence has become a key focus for technology companies and media institutions worldwide. Research by domestic and international organizations illustrates this trend: JD.com's PCL Lab has explored deep neural networks (DNN) and optical character recognition (OCR); Tencent's YouTu Lab has investigated facial detection, facial feature positioning, and image understanding; the Institute of Computing Technology at the Chinese Academy of Sciences has conducted research on 3D virtual human modeling, virtual human motion generation and control, multi-digital media fusion, and augmented reality; and several media organizations have speculated about Snap's AR database technology patents. Despite experiencing a capital winter accompanied by fear and skepticism, the VR industry welcomed new development opportunities in 2017.

The "Substance" and "Function" of the Intelligent Era

Professor Cao articulated that in the age of intelligence, AI and VR/AR embody a relationship of "substance" (体) and "function" (用). In media systems, "substance" refers to the supporting or carrier network, while content and applications constitute the "function" layer. Reviewing the development of the media industry, this substance-function relationship can be traced from initially using carriers to transmit sound and images, to transmitting digital audio and video through dedicated networks after digitization, and finally to broadcasting full-media content through converged networks and intelligent terminals following triple-network convergence. Today, AI plays the role of "substance," much like carriers, dedicated networks, and converged networks did in the past, while VR/AR and holography represent content and media forms in the AI media environment, together constituting a new substance-function relationship.

Recent developments in VR/AR technology applications indicate that lightweight VR technology combined with personal devices represents a major future trend. Meanwhile, mixed reality (MR) embodies a long-term direction for virtual reality evolution, achieving high-dimensional immersion by integrating more complex heterogeneous media systems and multi-space information to transcend three-dimensional vision.

When AI and VR form a new technological paradigm, VR's immersion, interactivity, and imagination are regarded as the most promising characteristics of new media. Professor Cao proposed that intelligence can be considered VR's fourth characteristic. From an industrial and application perspective, two major trends will shape future development: "VR+" and "VR+"—the former representing VR's integration with various industries (e.g., VR+ live streaming, VR+ gaming), and the latter representing VR technology's own iterative evolution.

Industry practices demonstrate progress in both directions: the Raindance Film Festival established VR screening halls, the British Museum partnered with Oculus to launch VR experiences, Kodak recently released its third-generation portable 4K VR camera, and Conspexit collaborated with Kujo to develop AR video games. These examples show that both VR+ industry integration and VR+ technological iteration are advancing toward research, development, and application.

Light VR and Instant VR

Addressing industry needs and VR content production challenges, lightweight technologies such as phone holders with all-in-one devices, motion capture with data gloves/controllers and hosts, and projection fusion are being deployed to overcome the poor user experience caused by bulky equipment and to satisfy immersive experience demands. To tackle VR content scarcity, Professor Cao emphasized that leveraging user-generated content (UGC) in the internet environment and encouraging public participation will drive rapid content growth. The "Instant VR" system developed by the New Media Research Institute at Communication University of China establishes a human-computer collaborative cloud, supporting rapid VR content production through public participation combined with image stitching software.

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