The Role of Artificial Intelligence and Extended Reality in Developing Virtual Production and Its Future Challenges

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Abstract:

The motion picture industry is undergoing a radical transformation driven by the rapid development of artificial intelligence and extended reality technologies. Virtual production represents an innovative technique that merges the real and virtual worlds, opening up new horizons for creativity and innovation in filmmaking. The aim of the Research is to explore the pivotal role of artificial intelligence in developing virtual production, identify the challenges facing this technology, and propose a comprehensive framework for evaluating its quality. The research focuses on understanding how to leverage the potential of artificial intelligence and extended reality to achieve maximum creativity and realism in filmmaking.

Research objectives include analyzing the technical capabilities of artificial intelligence and extended reality in virtual production, assessing their impact on various stages of filmmaking, identifying challenges and obstacles facing this technology, building a comprehensive theoretical framework, and developing an application model to integrate these technologies into the production workflow.

Virtual production is a promising technology that merges the real and virtual worlds, but it faces technical, ethical, and legal challenges. This study seeks to explore the central role of artificial intelligence in developing virtual production, identify the challenges facing this technology, and propose a comprehensive framework for evaluating its quality, to contribute to the sustainable development of the film industry while preserving human creativity. This leads us to the main question of the research problem: How can artificial intelligence and extended reality technologies be best utilized in virtual production to achieve maximum creativity and realism in filmmaking? What are the challenges and obstacles facing these technologies? And how can they be overcome?

A Descriptive analytical approach by gathering facts and information and analyzing global films (the study sample) to solve the research problem and achieve its objectives.

The research results summarize the impact of artificial intelligence and extended reality on virtual production, and identify the challenges and opportunities associated with these technologies. By investing in research and development, building qualified cadres, and establishing appropriate regulatory frameworks, these technologies can be leveraged to make significant progress in the film industry and provide richer and more interactive viewing experiences.

Keywords:

Virtual production, Artificial intelligence, Extended reality, Content Generation, Filmmaking, Virtual Reality

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