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(57) Abstract :
ABSTRACT A SYSTEM AND METHOD FOR PERSONALIZED MULTI-USER VIRTUAL AND AUGMENTED REALITY COLLABORATION USING AI A multi-user virtual and augmented reality collaboration system is disclosed that integrates real-time machine learning to enable adaptive, immersive, and synchronized interactions. The system comprises AR/VR head-mounted display units equipped with biometric and motion sensors, a hybrid edge-cloud processing architecture, and AI-driven modules for real-time personalization, object placement, and latency optimization. Using reinforcement learning and deep neural networks, the system dynamically adjusts scene rendering, user interactions, and AR content placement based on biometric feedback, gaze tracking, motion analysis, and environmental context. A real-time synchronization engine minimizes latency and bandwidth consumption across distributed users. The system further includes predictive algorithms to mitigate motion sickness and cognitive fatigue, enhancing user comfort and engagement. Applicable through remote work, education, industrial design, medical training, and multiplayer gaming, the invention delivers a context-aware, personalized collaboration framework for next-generation AR/VR environments.

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