

Multi-Users Extended Reality Remote Collaborative Operation Application based on Digital Twins 3D Projecting

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Abstract—This research investigates image processing and artificial intelligence motion recognition for interaction between virtual 3D objects and users. Digital Twins 3D Objects and environments are presented simultaneously through internet to multiple users. Based on the Google MediaPipe AI model at edge sides, remote servers could collect the information related to the motion of used for remote interaction and virtual 3D interaction. In addition, the virtual environments with 3D object are also modified. Via virtual GPU, Web GPU, and the estimation functions, the physical environments and users can be calculated. Users needn't to have the physical controller, 3D or VR glasses for the proposed XR remote collaborative operation application. The feasibility of the proposed system can be higher with less cost.

Keyword—Image Recognition, Digital Twins, Artificial Intelligence, Extended Reality, MediaPipe



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