



PRESENCE



Haptics



Holoportation



Virtual Humans

What It Is.

PRESENCE is a tool set for hyper-realistic XR-based human-human and human-machine interactions.

Holoportation enables real-time, 3D interactions by capturing, compressing, and transmitting volumetric representations of individuals.

This technology creates lifelike experiences in VR, AR, and MR environments, allowing users to connect and collaborate as if they were physically together.

Unlike traditional video calls, holoportation offers depth, realism, and presence and is the pathway to immersive communication that feels natural and unbounded by geography.

What It Can Do.

Holoportation has the potential to function as a bridge between the physical and digital worlds. With this technology, users can:

- Engage in lifelike multi-user virtual meetings or events.
- Host realistic training simulations in VR/AR environments.
- Recreate dynamic, interactive settings for education, healthcare, and entertainment.
- Build collaborative workspaces where teams can interact in real time, regardless of their physical locations.

Key Features.

- **Photorealistic 3D Representation:** Lifelike capture of expressions and movements for virtual presence.
- **Real-Time Interaction:** Natural communication in virtual or augmented environments.
- **Multi-User Scalability:** Supports up to 8 participants in shared virtual spaces.
- **Advanced Compression Techniques:** Enables smooth streaming over any network.
- **Cloud and Edge Computing Integration:** Scalable for large or complex sessions.
- **Automatic Calibration and Adaptation:** AI ensures precise 3D reconstruction.
- **QoS-Aware Streaming:** Adaptive streaming for efficient performance.

Advantages.

- **Hyper-Realistic Interaction:** Facilitates natural, engaging communication that replicates face-to-face experiences.
- **Broad Accessibility:** Designed for compatibility with multiple XR setups, making it available to a diverse audience.
- **Scalable Across Use Cases:** Adapts seamlessly for personal, professional, and industrial applications.

How Does It Work?

By seamlessly merging the physical and digital worlds, holoporation creates meaningful, immersive interactions that feel as real as being there in person. It's an innovation that's set to transform how we experience PRESENCE.

The Tech Stack.

- **Volumetric Capture**
Multi-camera systems use light-field technology to capture depth and texture, enabling photo realistic 3D reconstructions.
- **Compression and Transmission**
Advanced algorithms compress volumetric data for real-time streaming while maintaining quality. The system adapts to network conditions for stable performance, even on low-bandwidth connections.
- **Cloud and Edge Computing** Distributed computing processes volumetric data, ensuring scalability and low latency for large multi-user environments.
- **Dynamic Rendering** Real-time engines render volumetric data into interactive 3D visuals, ensuring cross-device consistency.
- **Calibration and Adoption**
Automatic calibration optimizes cameras for accuracy, while machine learning corrects lens distortion and low contrast.



Impact.

Holoporation is poised to improve communication and collaboration in the following areas particularly:



Professional Collaboration

Enhance teamwork and creativity by enabling remote teams to work together in lifelike virtual spaces.



Manufacturing & Training

Improve efficiency and safety by using XR to deliver realistic, hands-on training for manufacturing tasks.



Health

Support patient care with XR experiences that reduce pain, stress, and anxiety in medical environments.



Cultural Heritage

Bring history to life by offering engaging and interactive virtual tours of Europe's rich heritage sites.



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