

Holographic Teleportation and Human Presence in Interior Design: A Multisensory AI-Based Approach

Prof. Shahabuddin Z. Contractor

School of Architecture and Planning, P. P. Savani University, Kosamba, Gujarat, India

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ABSTRACT

Advancements in holography, artificial intelligence (AI), and multisensory technologies are set to transform the interior design industry. This manuscript presents the concept of 'Holographic Teleportation', a process through which designers and clients can experience, modify, and humanize interior spaces even before actual construction. The method integrates real-time 3D holograms, AI-based behavioral analysis, and sensory experiences (vision, color, material, sound, smell, and touch). The result is a transformative, immersive, and experiential platform for informed design decision-making.

Chapter 1 – Introduction

The interior design process has evolved from traditional 2D drawings to advanced 3D models. However, visual presentation alone is insufficient, as it cannot fully express the human experiential dimension.

Telepresence technology, or holographic teleportation, surpasses this limitation by allowing a person to be 'present' anywhere in the form of their hologram. When combined with AI and multisensory technologies, it enables designers and clients to collaborate, evaluate, and personalize the design process in extraordinary ways.

Chapter 2 – Holographic Teleportation: The Technical Foundation

2.1 Holographic Presence

“Holoporation” refers to transmitting a person’s lifelike 3D image and movements in real time to another location using 3D capture systems and mixed-reality headsets. Next-generation polychromatic holographic displays reproduce materials and colors with near-realistic quality.

2.2 AI-Enhanced Simulation

Artificial intelligence rapidly analyzes user behavior and preferences, adjusting the environment accordingly. As users interact with the interior, light, colors, and ambience adapt instantly.

Chapter 3 – Multisensory Integration: Toward a Complete Experience

3.1 Visual and Spatial Experience

Holographic architecture replicates depth, color, and material realism with precision, allowing clients to ‘walk through’ their design.

3.2 Sound, Smell, and Touch Technologies

- Sound: Spatial audio systems simulate how sound behaves across different materials.
- Smell: Digital scent devices generate specific fragrances such as wood, plants, or decorative elements.
- Touch: Haptic gloves and surfaces allow users to feel textiles, wood, or flooring textures.

3.3 Humanization and Emotional Impact

Multisensory design deeply influences human emotions, health, and creativity. When all senses converge, the experience becomes not only realistic but profoundly human.

Chapter 4 – Practical Applications in Interior Design

4.1 Client–Designer Collaboration

Clients can instantly alter colors, furniture, lighting, or ambience, while AI suggests options based on their emotions and responses.

4.2 Accessibility and Inclusivity

Holographic teleportation removes geographical barriers, enabling design services to be accessed globally. It is also inclusive for users with special needs.

Chapter 5 – Challenges and the Future

Key challenges include:

- Development of high-quality sensory outputs
- Cost reduction

- Privacy and data security

With future advancements in AI and hardware, these issues are expected to be resolved. Potential applications extend beyond design to education, healthcare, and retail.

Chapter 6 – Conclusion

Holographic teleportation, integrated with AI and multisensory experiences, has the potential to radically transform interior design processes. It not only provides pre-construction experiences but also enhances collaboration and satisfaction between clients and designers.

Authors' Information

Shahabuddin Z. Contractor

Assistant Professor, School of Architecture and Planning P. P. Savani University, Kosamba, Gujarat, India

Email: shahabuddin.contractor@ppsuh.ac.in

Research Interests:

- Holographic teleportation and its application in architecture and interior design
- Redefining human presence in interior spaces through technology
- AI-based multisensory experiential design
- Human-machine interaction and design psychology
- Educational and practical applications of virtual and mixed reality

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