CODESIGN.X: EVALUATING PEDIATRIC ROOM DESIGN USING VR AND BIOSENSORS

Tech ID: 33867 / UC Case 2025-076-0

PATENT STATUS

Patent Pending

BRIEF DESCRIPTION

Poorly designed healthcare environments can increase patient stress and delay recovery, particularly in pediatric settings (see, e.g., Devlin & Andrade 2017; Park et al. 2018; Jafarifiroozabadi et al. 2023). Traditional methods for gathering architectural design feedback, such as interviews, surveys, and focus groups, rely heavily on subjective user input, and often fail to capture the voices of children by relying on parent proxies. Physical mock-ups, a common alternative to traditional methods, provide a full-scale model of a room or space, often constructed from materials like cardboard or foam. While these mock-ups allow for some degree of spatial exploration, they are time-intensive, and limited in their ability to replicate real-world conditions; high-fidelity mock-ups which incorporate more realistic materials and finishes add expense and limit flexibility for testing multiple design iterations.

To overcome these challenges UC Berkeley researchers have developed an innovative participatory design methodology that leverages advanced virtual reality (VR), eye-tracking, and physiological/emotional biofeedback technologies to evaluate the design of pediatric healthcare environments. This comprehensive system is further enhanced by custom-developed workflows for creating dynamic, interactive room simulations that are randomized to ensure rigorous, unbiased data collection. The methodology is uniquely capable of gathering objective, quantifiable data on how pediatric patients and their families respond physiologically and emotionally to specific environmental design features.

SUGGESTED USES

» Design of pediatric healthcare environments, such as pediatric hospital rooms or outpatient clinics

» Any human centered architectural designs, including educational or rehabilitative settings

ADVANTAGES

» Robust, evidence-based approach to human-centered design in healthcare

» Cost-effective and flexible compared to physical mockups while capturing more data than interviews or surveys

» Comprehensive assessment of non-verbal responses from vulnerable pediatric populations, whose feedback is traditionally difficult to assess in healthcare environments

RELATED MATERIALS

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OTHER INFORMATION

CATEGORIZED AS

» **Engineering**
» Engineering
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» Research Tools
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