

# The Living Wall Display: Physical Augmentation of Interactive Content Using an Autonomous Mobile Display

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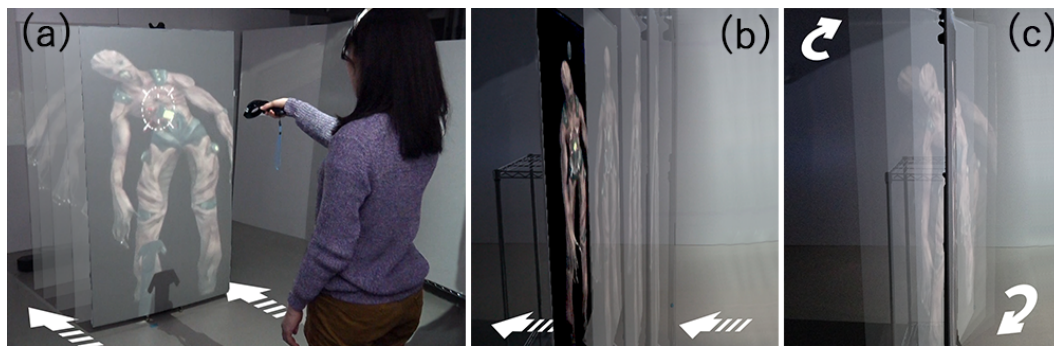


Figure 1: (a) FPS Shooting Game (b) display drives off backward when user kills zombie. (c) hitting the zombie's shoulder quickly rotates the display.

## ABSTRACT

The Living Wall Display displays interactive content on a mobile wall screen that moves in concert with content animation. To augment the interaction experience, the display dynamically changes its position and orientation, responding to the content animation triggered by user interactions. We implement three proof of concept prototypes that represent pseudo force impact of the interactive content using physical screen movement. Pilot studies show that the Living Wall augments content expressiveness, and increases the sense of presence of the screen content.

## CCS CONCEPTS

• **Human-centered computing** → **Augmented reality**;

## KEYWORDS

VR, robotic display, multi-modal display

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## 1 LIVING WALL DISPLAY

Current 3D display technologies add depth to interactive content, but they remain cumbersome. We still mainly rely on conventional flat 2D displays to view interactive content such as video games. This limits the immersion, because the content does not feel present in our environment; instead, it is locked inside the display. Recent innovations allow us to view 3D information via stereoscopic holograms. Yet, these approaches rely on head-mounted glasses, and the content lacks a physical embodiment in the real world.

Recent work has begun to explore enhancing immersion with virtual content by using actuated displays. For example, Shape-shifting wall display [Takashima et al. 2016] can change its shape and position depending on the screen content being displayed and spatial relations of its users. The entertainment industry has also developed quite sophisticated shape-changing multi-display systems to support interactive performances [Bot and Dolly 2013]. Several shape-changing multi-display systems explore increasing the sense of spatial information of screen content: Tilt Displays [Alexander et al. 2012] is an attempt to augment 3D information of the screen content by physically tilting small piece of displays. However, these movements of display are not synchronized with player's input.

