

Tangibles at Play

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Abstract

Graphical User Interfaces (GUIs) separate intangible representations (pixels) and remote controllers (mouse, keyboard). We present an opposite approach, “Tangible User Interfaces” (TUIs), that tightly couples representations and controls to take advantage of multimodal human senses and skills to manipulate physical objects. We showcase the latest examples of TUIs with a special focus on play, improvisation, and creativity.

Introduction

The Tangible Media Group at the MIT Media Lab researches the “Tangible Bits” vision of Human Computer Interaction by bringing physical form to digital information through the development of Tangible User Interfaces [Ishii, Ullmer]. People have developed sophisticated skills for sensing and manipulating our physical environments. However, most of these skills are not employed in traditional GUIs. Tangible Bits seeks to take advantage of the richness of multimodal human senses and skills developed through our lifetime of interaction with the physical world, by employing metaphors of our existing relationship with physical objects and environments to seamlessly couple the dual worlds of bits and atoms. Our approach is unique in the way we blend HCI, design, and media arts to strike a balance between new enabling technologies, aesthetics, and concept.

Vision

Our latest work has focused on increasing the sense of play in interactions, allowing for improvisation and creativity with digital tools by incorporating elements from the real world - color, texture, form, motion, gesture, sound- to create enriching multimodal interactive experiences. Tangibles at Play integrates art, design, and education to reveal new perspectives on how we use our hands and peripheral senses to understand information.

Innovation and Implementation

Our experiences embody new high level concepts for interactivity implemented with a strong appreciation for aesthetics and innovation in enabling technologies. We exhibit recent playful developments of the Tangible Bits vision, projects such as Topobo [Raffle, Parkes], a set of building blocks with kinetic memory, the ability to record and playback physical motion, and I/O Brush [Ryokai, Marti], a new drawing tool which “picks up” colors,

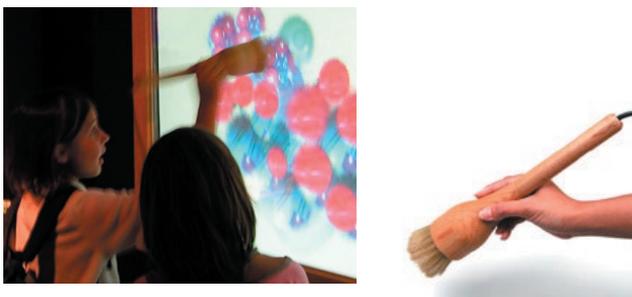


Figure 1. the I/O Brush in use

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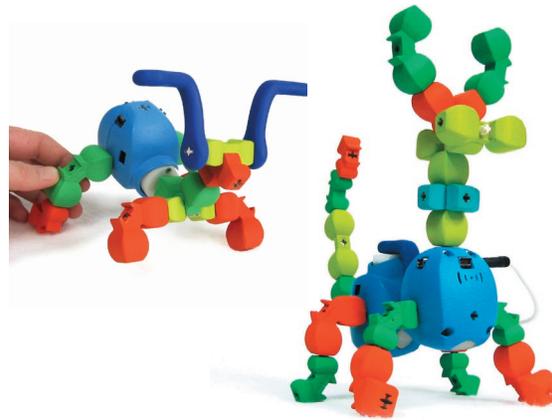


Figure 2. Topobo creations

textures, and movements in physical materials and allows you to draw with them. We also exhibit Audiopad [Patten, Recht], a tabletop interface for musical expression and performance, and FlowBlocks [Zuckerman, Arida], blocks which enable children to create structures in time, that behave like common patterns in life. These and other projects displayed share core technical innovation revolving around interface design. By designing the physical and digital aspects of an interface so that the user experience is simple and intuitive, we allow people to focus on the experience, instead of the interface.

Contributors

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