Current Research in User Interaction

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User Interaction, Visualization, Virtual Reality
Overview

• SAGE2: A Multi-User Touch Centric Interface
• Unity3D in CAVE2: First Steps in a More Interactive Virtual World
Scalable Amplified Group Environment

• Sharing of content across scalable resolution shared displays (SRSD)

• Multiple modes of interaction
  – Laptop pointer, touch wall, mobile touch, web
Content Browser

- Radial Menu
- Thumbnail Browser
Integrating Touch in SRSDs

• Direct mouse to touch
  – Limited to existing mouse interactions: click and drag
  – Touch not as precise as mouse pointer
  – Physical occlusion of screen by fingers, hand, etc.
Integrating Touch in SRSDs

- Gestures for linear menus

Integrating Touch in SRSDs

- **SAGE**
  - Large icons for touch / multiple pointer
  - Fixed to a side bar
  - Classic single user desktop design
Radial Menu Design

- Buttons can be placed within user’s viewable space
- Within close distance of fingers
  - Minimize arm fatigue
  - Quick access
Thumbnail Window Design

- Handedness of the menu to keep content in user’s central field of view
- Size of the thumbnail window
  - Physical movement along the wall vs. virtual (scrolling windows)
Unity3D in CAVE2: First Steps in a More Interactive Virtual World
Unity Game Engine

• Early (Pre-CAVE2) projects
The Battle for Hearts & Minds: Interrogation and Torture in the Age of War

- Virtual reality art performance
The Battle for Hearts & Minds: Interrogation and Torture in the Age of War

• Veteran testimonies of US interrogations and abuses of prisoners in Iraq during the American counter-insurgency campaign during the early 2000s

• Collaborative work between:
  – Scott Rettberg - University of Bergen, Norway
  – Roderick Coover - Temple University, Philadelphia
  – Daria Tsoupikova, Arthur Nishimoto - University of Illinois at Chicago

• Based on interviews and dissertation by
  – Political Scientist Dr. John Tsukayama
The Battle for Hearts & Minds: Interrogation and Torture in the Age of War
HASTAC 2015

• Humanities, Arts, Science, and Technology Alliance and Collaboratory
• Michigan State University, East Lansing
• May 27-30, 2015
• Hearts & Minds Performance and Panel Discussion
• Opening Reception: Art show in planetarium
Hearts and Minds Performance
Hearts and Minds Performance
Virtual Campus

- Virtual reality rendering of the University of Chicago campus
- Scott Stocking
  - Spatial Data Infrastructure Manager, U of C
Virtual Campus

• Large amounts of architectural data
  – Cubic buildings
  – Google Sketchup models
  – Building Information Model (BIM)
• Pushed Unity 4 to the 32-bit memory limit
• 64-bit Unity 5 installed in CAVE2 last week
getReal3D for Unity

- Unity plugin for managing cluster synchronization, viewer-centered perspective and user interaction for virtual reality environments
Omicron-Unity Module

• Collection of additional tools to aid in the development of Unity applications for deployment in CAVE2

• https://github.com/arthurnishimoto/omicron-unity/
Omicron-Unity Early Tests

• Spring 2012 Game Class Project in CAVE2 Simulator
Omicron-Unity Early Tests
Omicron-Unity Early Tests