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3D UI New Directions: Introduction

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Welcome, introduction, & roadmap
3DUIs in a nutshell
3DUI new directions: Introduction
New directions I
New directions II
Video Games: 3DUIs for the Masses
Beyond Visual: shape, haptics and actuation in 3DUI
From Hack to Pack
Conclusion

Roots and dawn of 3DUI

We leave in 3D world

3D computer graphics is common place today

- ▶ Media, movies, design, architecture and games
- ▶ Need tools for creating and manipulating 3D content

Easily accessible interactive 3D computer graphics

- ▶ Games is perhaps the main applications of 3D UI in home
- ▶ Need interfaces for effective and fun interaction: a topic of lecture later

The dawn of 3DUI

- ▶ Sketch and Ultimate Display by Ivan Southerland
- ▶ "Put that there"

Sketch by Ivan Southerland

The rise and fall of VR

Virtual Reality: Captivating and compelling idea

Innovative hardware for 3D interaction

- ▶ VR Glove
- ▶ HMDs
- ▶ Polhemuse 3D trackers
- ▶ Shutter Glasses
- ▶ CAVE

"Killer" applications

- ▶ Simulators, walkthroughs, training, content creation
- ▶ Some of the application were very impressive

Too much hype, did not live up to the expectations

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Desktop 3D and Games

There was no true 3D graphics in homes 10 years ago

1990s: Internet bubble meets 3D computer graphics

► VRML and virtual communities boom of 90s
  • Anyone remembers Blacksun Interactive?

Rise of PC as an ultimate 3D platform

► … how games killed SGI
► Inexpensive but powerful rendering solutions

No 3D user interface devices made it to PC

► Is this the end of 3DUI?
► Will it go away with SGI, VR etc.?

Augmented Reality

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The raise of Augmented Reality
- ► what is AR?
  - overlaying of 3D computer graphics on the real world; interactive and in real time
- ► old and very compelling idea, suggested by Ivan Southerland in 60s
- ► technologically extremely challenging
  - 3D tracking and registration are hard
  - making good see-through displays is very harder

1998: Development of AR Toolkit public library for making AR applications
- ► simple video-see through techniques
- ► very simple vision marker-based tracking
- ► worked very well!

AR research booming and 3D interaction is important part of it
- ► 2007: first ever PS3 AR game released

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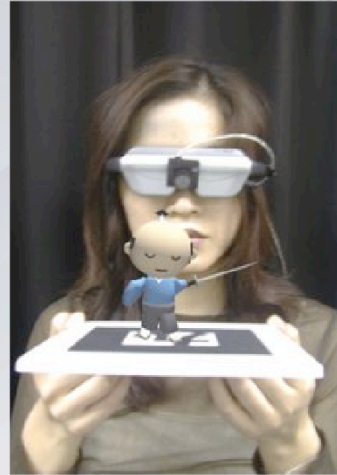
3D UI and VR are reborn

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3D UI at home: development of 3D motion
sensitive input devices for games
- ▶ Nintendo Wii, Sony PS3 tilt controller
- ▶ EyeToy for PS3
- ▶ very successful with casual gamers!
- ▶ new platform for 3D UI innovation
  - • Creating a common 3DUI culture?

Recovery of high-end VR
- ▶ got over the hype and growing steadily in
  a number of important areas
  - • Defense, medicine, training and
    design
- ▶ Fredrick Brooks: "Virtual reality is real"
- ▶ need 3D user interfaces

New Directions in 3DUI

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3D UI are exciting again!

- ► What are the next opportunities?
- ► What are the challenges?
- ► What are the next technologies?
- ► That what we tell in the next series of talks.