

Games and 3D User Interfaces: Past, Present, and Future

Lecture #2: Games and 3DUI*
Spring 2008

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*Special thanks to Ivan Poupyrev

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3DUI and Video Games – Why?

- Video games
 - multi-billion dollar industry: \$10.5 billions in 2005 in US
 - major driving force in home entertainment: average gamer today is 33 years old
 - advanced 3D graphics in HOME rather than universities or movies studios
- Driving force in technological innovation
 - graphics algorithms and hardware, sound, AI, etc.
 - technological transfer to healthcare, biomedical research defence, education (example: Folding@Home)
- Recent innovations in 3D user interfaces
 - graphics is not enough anymore
 - complex spatial, 3D user interfaces are coming to home (example: Nintendo Wii)
- Why 3D user interfaces for games?
 - natural motion and gestures
 - reduce complexity
 - more immersive and engaging
- Research in 3D UI for games is exiting
 - will transfer 3DUI to other practical applications, e.g. education and medicine



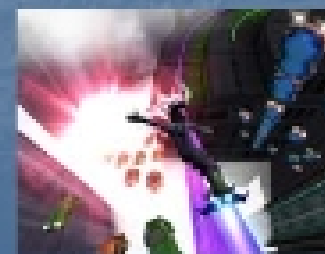
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3DUI and Video Games – What?

- Goal of 3DUI in games
 - designing input devices and interaction techniques to effectively control highly dynamic 3D computer generated content
 - there are basic approaches
- Mapping 2D input to interact with 3D world
 - keyboard and mouse, joysticks, game controllers
 - traditional form of gaming user interfaces: e.g. Flight Simulator, Second life, Halo 3
- Simulating real world tools or using physical props
 - simulation: steering wheels, light guns, musical instruments
 - physical props: dance pads
- True spatial tracking of user gestures
 - camera, e.g. Sony Eyetoy
 - acceleration/infrared tracking: Wii controllers
- This talk focuses on last two interface solutions



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Lecture Outline

- Historical Perspectives
 - early consoles
 - arcades
 - early 3D/VR game interfaces
- 3DUI in the home today
 - new generation of game UI
- The Future of UI in games
 - AR/VR/mobile games
 - working towards the future
- Conclusions

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Historical Notes on Game UIs

Early Video Games

- 1947: Cathode-ray tube amusement device
 - probably the earliest proposal for electronic gaming device
 - not known if it was implemented
- Proposed interface
 - knobs and buttons

