Input Controls:
Beyond the Keyboard, Mouse and Joypad

Technical Game Development II

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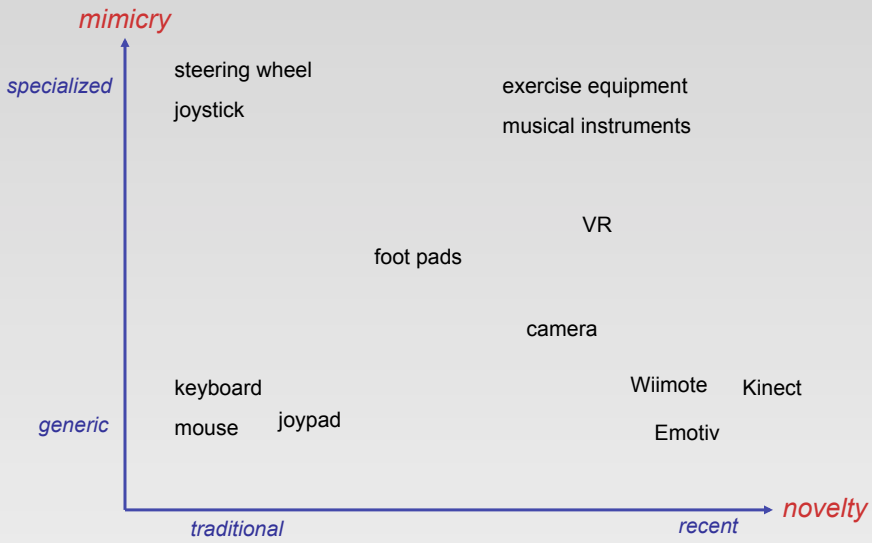


Think about...

Which of these ideas you could apply to your game !

Embrace alternative controllers

[From Harmonix presentation]

We haven't made a joypad game since 2003

Camera Guitar Microphone

[From Harmonix presentation]

Guitar + Drums + Microphone!

We've noticed some big user benefits…

[From Harmonix presentation]

They look like what they do

[From Harmonix presentation,]

It's obvious how to use them

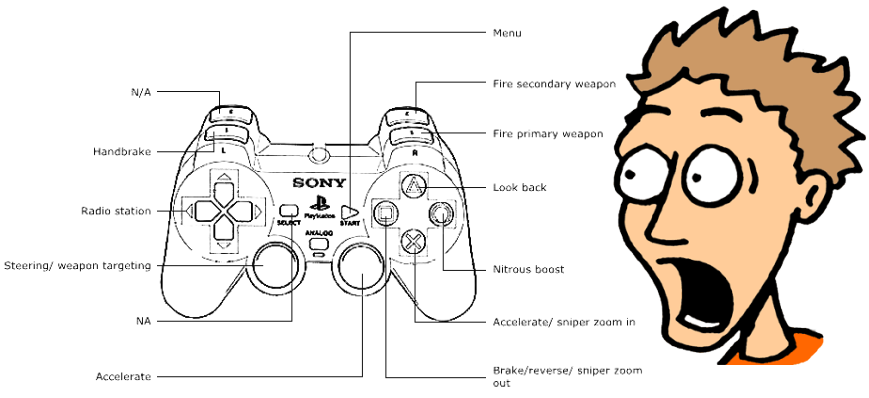
[From Harmonix presentation]

In Contrast... Joypads

- Generic by design
  - So can't "look like what it does"
  - No mental model for how to use it

[From Harmonix presentation]

Today's joypads are intimidating



[From Harmonix presentation]

These controllers are inviting

[From Harmonix presentation]

They also "level the playing field"

[From Harmonix presentation]

The design principle:

Ensure intuitive controls

[From Harmonix presentation]

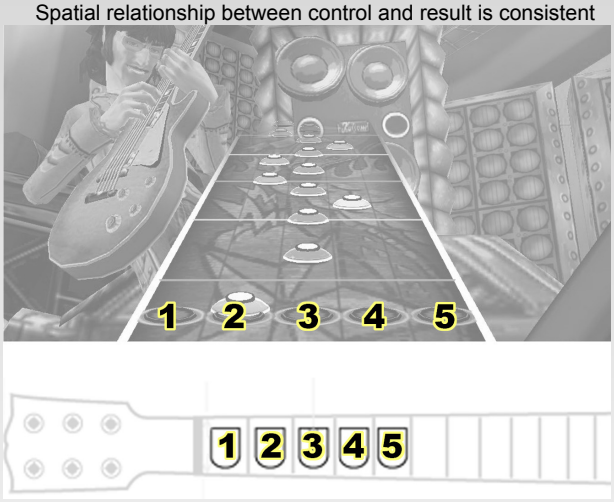
Intuitive Controls

- It just works
- This is our responsibility
- Employ usability principles

[From Harmonix presentation]

Natural Mapping

Spatial relationship between control and result is consistent



[From Harmonix presentation]

Unnatural Mapping

[From Harmonix presentation]

Dance Pad

Diamond Park

Inertial and IR Sensing

- Wiimote
  - finger tracking *[video]*
  - head tracking *[video]*

Wii Finger Tracking

Wii Head Tracking

Using Cameras and Computer Vision

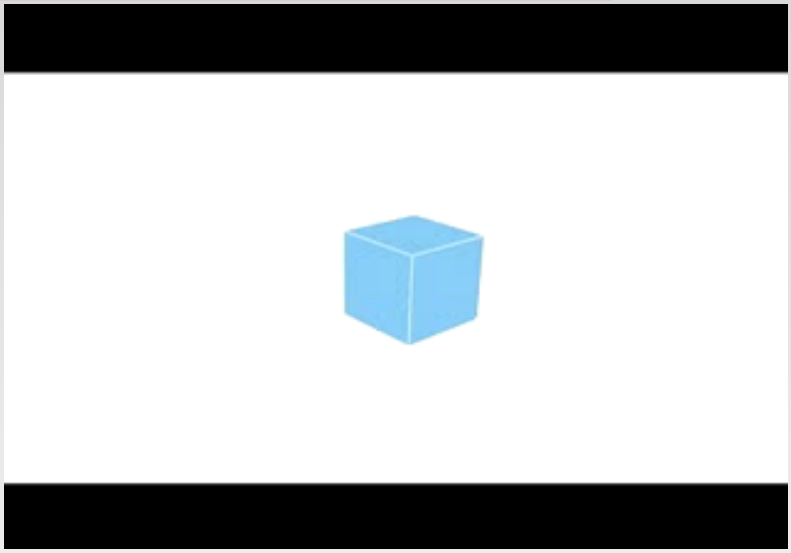
- Kinect (for Microsoft XBox 360)
  - RGB camera
  - infrared depth sensor (IR laser projector+sensor)
  - microphone array
  - $150 (free SDK)

Kinect

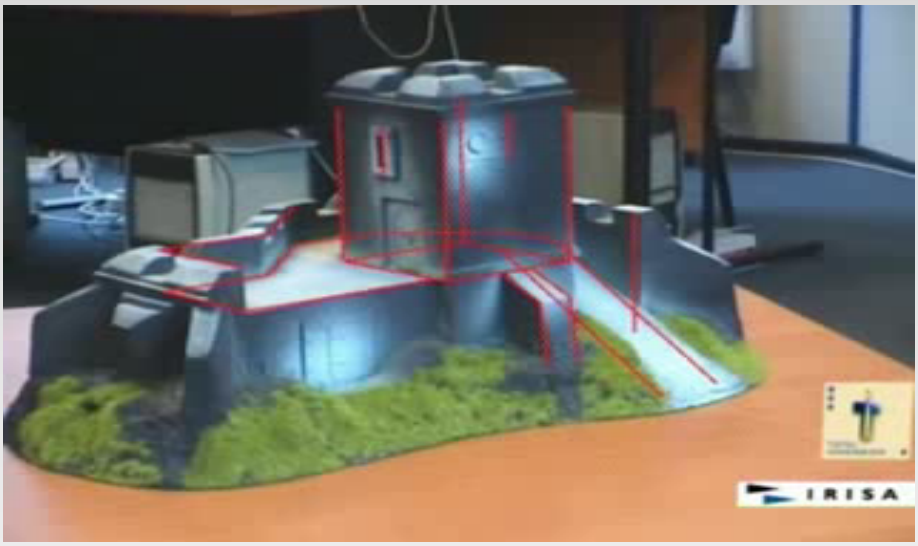
Augmented Reality

- Eye of Judgement *[video]*
- Lab Demos *[2 videos]*

Eye of Judgement



Augmented Reality



Augmented Reality

Virtual Reality

- Prof. Lindeman's TactaVest *[video]*

  part of the "Playstation 6"

TactaVest

Neural and Bio Feedback

- Heart rate and skin conductance
  - Wild Divine IOM *[video]*
    - http://www.meditations-uk.com/products/wilddivine.html
- Neural activity (EEG)
  - EmotivEPOC *[video]*
    - http://www.emotiv.com

Wild Divine IOM

Emotiv

Other Input Control Ideas

- Speech
  - cheap, easy to get
  - slow, unreliable (esp. in noisy env.)
- "Embodied Gaming"
  - e.g., robosoccer with Sony Aibos

Input Controls Summary

- What can you do with _____ that you ***couldn't do*** before?
- What's ***more fun*** with _____ than with previous technologies?
- Does _____ ***enhance*** game play, rather than replacing traditional controller?

[From Z. Drake, GDC'08]