



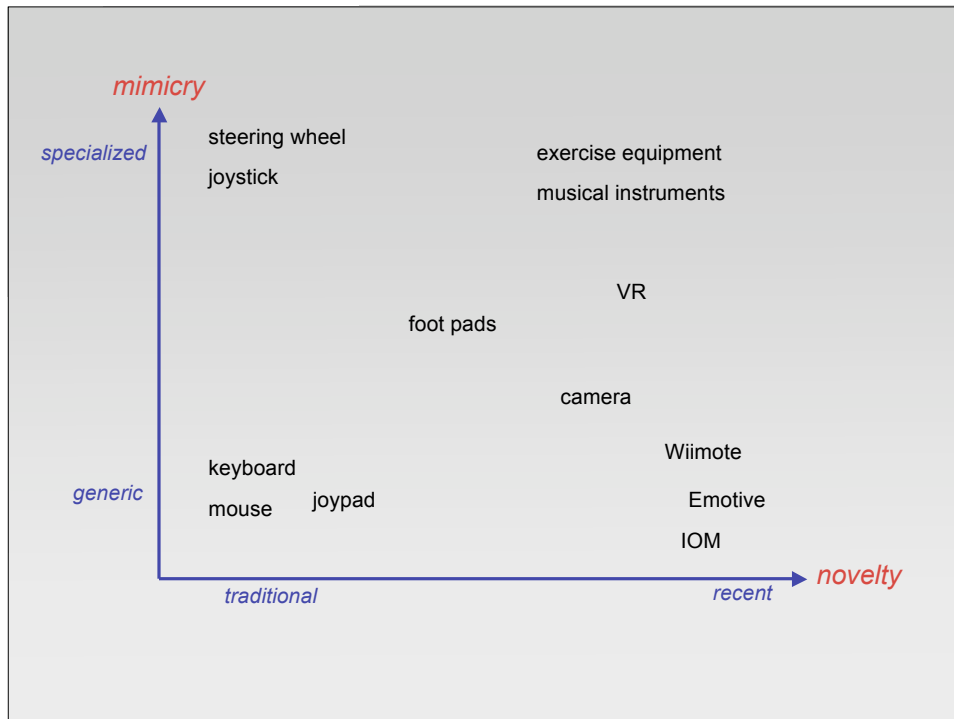
Input Controls

Technical Game Development II

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IMGD 4000 (D 08)

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Embrace alternative controllers



[From Harmonix presentation, IMGD Seminar 2/7/08]

We haven't made a joypad game since 2003

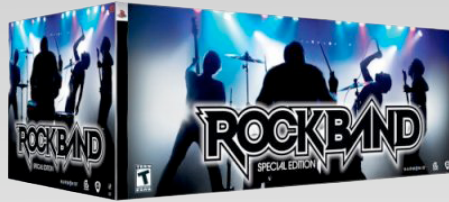


Camera

Guitar

Microphone

[From Harmonix presentation, IMGD Seminar 2/7/08]



Guitar + Drums + Microphone!

We've noticed some big user benefits...

[From Harmonix presentation, IMGD Seminar 2/7/08]

They look like what they do



[From Harmonix presentation, IMGD Seminar 2/7/08]

It's obvious how to use them



[From Harmonix presentation, IMGD Seminar 2/7/08]

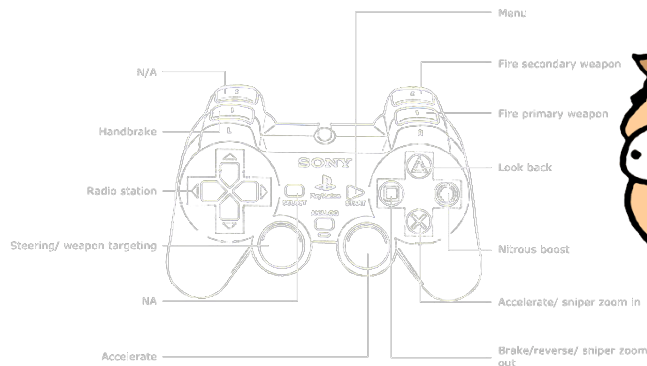
Joypads



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

[From Harmonix presentation, IMGD Seminar 2/7/08]

Today's joypads are intimidating



[From Harmonix presentation, IMGD Seminar 2/7/08]

These controllers are inviting



[From Harmonix presentation, IMGD Seminar 2/7/08]

They level the playing field



[From Harmonix presentation, IMGD Seminar 2/7/08]

Ensure intuitive controls

[From Harmonix presentation, IMGD Seminar 2/7/08]

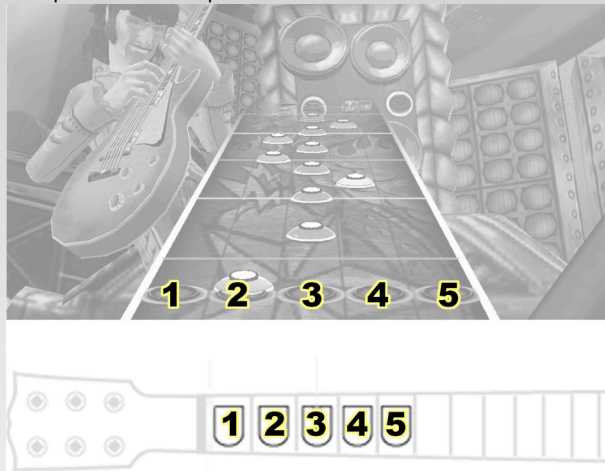
Intuitive Controls

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

[From Harmonix presentation, IMGD Seminar 2/7/08]

Natural Mapping

Spatial relationship between control and result is consistent



[From Harmonix presentation, IMGD Seminar 2/7/08]



[From Harmonix presentation, IMGD Seminar 2/7/08]

Other Physical Input Devices

- Foot (dance) pads [\[video\]](#)
- Exercise equipment
 - www.exerciseinabox.com [\[video\]](#)
 - Diamond Park [\[video\]](#)

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**Authentic Autographed
Memorabilia**

Exerciseinabox.com we believe fitness and children should be affordable. Therefore we offer all of our products at wholesale prices. Findings in recent studies children exercise routine should be fun and involve sports and fitness. Weight loss in children is as important to their health as it is to the social standing. Therefore our interactive video games, and products are manufactured to involve practice of sports such as indoor tennis, interactive boxing, interactive soccer, interactive ping pong. Along with sports and fitness, fitness and children, to induce weight loss in children. To have Children exercise routine on a daily basis is one of the important key factors along with a proper diet to encourage weight loss in children which why our interactive video games such as; interactive boxing, interactive ping pong, interactive soccer. Are a substantial addition to your children exercise routine. Our toys and games are most all plug and play which provide simple, easy to use, portable.

Children may also learn skills of the interactive ping pong, interactive soccer, indoor tennis, sports involved from practice. Which is another important factor of our products. Interactive video games such as indoor tennis, interactive ping pong, interactive soccer, interactive boxing, make a perfect addition to sports and fitness. Practice makes perfect, as the old saying goes. Combining a children exercise routine, fitness and children, and weight loss in children is what makes our toys and games popular and fun to play with.

Plug and play toys and games geared towards fitness and children, sports and fitness, and involves a children exercise routine is the best way to encourage fitness and children along with children exercise routine.

Even when the weather is bad outside, our plug and play toys and games provide sports and fitness for all to play. Our interactive video games even supply a chance for indoor tennis, interactive boxing, interactive soccer, interactive ping pong, and many more.

Our interactive video games are simple plug and play directly to your TV with no additional system needed. Therefore practice of sports and fitness can be played indoors; such as indoor tennis without much room required.

Nintendo Wii systems are available depending on stock right here on Exerciseinabox.com. Nintendo Wii systems are one the most popular interactive exercise fitness games available on the market. Most of you should have already seen the commercials advertising the Nintendo Wii systems and video games which clearly involve sports and fitness and will encourage weight loss in children and adults. For more complete information on the Nintendo Wii system please visit their official website Nintendo.com. Check back often as we will be carrying Nintendo Wii systems in the next coming weeks.

Thank you for visiting Exerciseinabox.com

Inertial and IR Sensing

- Wiimote
 - sports games [\[video\]](#)
 - finger tracking [\[video\]](#)
 - head tracking [\[video\]](#)

Using Cameras and Computer Vision

- EyeToy for PS2
 - AntiGrav (Harmonix) [\[video\]](#)
 - face tracking
 - template matching
 - rough pose estimation
 - and *many* others (see wikipedia page)

Augmented Reality

- Eye of Judgement [\[video\]](#)
- Lab Demos [\[2 videos\]](#)

Virtual Reality

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

part of the "Playstation 6"



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>



Game Design Ideas using EmotivEPOC

- What can you do with EPOC that you *couldn't do* before?
- What's *more fun* with EPOC than with previous technologies?
- EPOC *enhances* gameplay, rather than replacing traditional controllers

[From Z. Drake, GDC'08]

The Emotiv SDK

- The Affectiv™ suite measures discreet emotional states.
- The Cognitiv™ suite detects conscious thoughts.
- The Expressiv™ suite can identify facial expressions in real-time.

[From Z. Drake, GDC'08]

Uses for Expressiv

- Spontaneous avatar animation for MMORPG and virtual world situations: why “/wink” when you can just wink?
- NPC interactions in RPGs: don’t just select the “friendly” or “angry” dialogue choices.
- *Clench*: a good conscious, short-term, low-latency detection that your player is unlikely to trigger unintentionally.
- Remember to go easy on your players’ physiology!

[From Z. Drake, GDC’08]

Uses for Affectiv

- *Excitement*: modulate music volume, crowd excitement, graphical flourishes.
- *Difficulty modulation*: excitement, frustration
- *Game testing*: quantifiable user data
- *Mental challenges*: complete a task while remaining focused, meditate to restore mana

[From Z. Drake, GDC’08]

Uses for Cognitiv

- Some things are just more fun to do with your mind than with a button!
- **Manipulating objects:** Telekinesis (push, pull, lift, etc), Disintegration (disappear)
- **Social manipulation:** using pull as a social attractor
- Think of a cognitiv action as a “super combo” or elaborate “special move” rather than as a button press.

[From Z. Drake, GDC'08]

Categories of Emotiv Input Controls

- Trained vs. Untrained
- Conscious vs. Unconscious (some are both!)
- Short term vs. Long Term
- Low Latency vs. High latency

[From Z. Drake, GDC'08]

Training Cognitiv in Game

- Make training part of the game
- Training in-context works better than training in a completely different environment
- Allow players to return to training when they want
- Save profile information

[From Z. Drake, GDC'08]

Other Input Control Ideas

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

