Haptic control and feedback in mobile gaming

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Presentation outline

- Why to use haptics?
- Haptics in pervasive games
- Multitouch
- Accelerometer
- Lots of games!
Haptics - is it a big deal?

“Stunning graphics can fool the eyes into believing a few lines of code and a few electrons really are an intricate world, but only with haptics can players reach in, touch, and manipulate that as if it were real.”

- D. Chang, Immersion, 2002

“…vibrotactile feedback provides players with increased levels of realism and immersion.”

- S.-Y. Kim, 2007

Immersion – challenge, sounds, visuals, (plot, characters), controls..
Haptics a factor in sales?

- Xbox 360 (22.11.2005)
- PS3 (11.11.2006)
- Wii (19.11.2006)
- Appealing to a wider audience
PainStation

- Unique, effective
- Mistake in the game punished with pain
  - Heat, electric shock, whip (exchangeable)
- Tilman Reiff and Volker Morawe, /////fur////
Haptics in pervasive gaming

- Ullmer and Ishii
  - Representation level
    - Physical object provides haptic sensations (such as Airbat) compared to digital image – intangible
  - Interaction level
    - Physical object and digital information interact
    - Stronger bond physical-digital
Doom 3 PDA Mod (Faust)

- Virtual in-game PDA
- Real PDA modded to be used as a pervasive game element
Haptic Airkanoid

- Original Airkanoid, 1985, Taito
- Mixed reality
- Airbats equipped with 2 vibration elements
- Vibration feedback with each hit
  - All participants - more fun
  - ”good but not realistic”
iPhone justification

- App Store working well
  - Fuelling the mobile software market
  - 25% downloaded SW is games
- Apple targeting the gaming market
- First one to really put these techs in use
iPhone multitouch screen

- Capacitive multitouch screen, no stylus
- Flick, tap, pinch and other gestures
Advantages of multitouch

- Less required physical buttons (on device)
  - Enables larger screen resulting in better immersion
- Controls can be more intuitive instead of assigned similar buttons
  - Gestures vs. generic buttons
- No more ignored commands (compared to older gen touch screens)

Disadvantages:
- Fingers block view, not good for co-op games
Games using Multitouch

- Air hockey
- Multitouch capabilities, 2 players on same iPhone (or via Wi-fi)
- Simcity will use zoom functions
  - Compare stylus vs. multitouch
- Pinch ’n Pop
  - http://www.youtube.com/watch?v=XFySwWXfE bg
iPhone accelerometer

- A digital accelerometer
- Silicon mass, silicon springs, electrical current
- Rotate -> fluctuation in the current
- Registered -> software
Labyrinth game

- New implementation of an old game
  - [http://www.youtube.com/watch?v=KymENgK15ms](http://www.youtube.com/watch?v=KymENgK15ms)

- Personal opinion
  - Intuitive controls, natural gameplay
  - Ball movement fairly realistic
Trism success story

- Uses touch-screen and accelerometer
- 4 months coding (nights, weekends)
- 250,000$ profits first 2 months of sales
- Steve Demiter, Demiforce
- [http://www.youtube.com/watch?v=hy0ptZisr70](http://www.youtube.com/watch?v=hy0ptZisr70)
Accelerometer

- Other games
  - Racing
  - Snowboarding
  - Flying (BiiPlane)
  - [http://www.youtube.com/watch?v=QFuRRUhdk9A](http://www.youtube.com/watch?v=QFuRRUhdk9A)

- Accelerometer devices
  - Models from Nokia, Samsung, Motorola

- Keeper or a trend?
NiiMe & NiiWheel

- Nokia2MovingExperience
- Accelerometer in N95
- Data sent via Bluetooth, SW in PC and S60 phone
- Drums, mario, flight simulator, racing
- [http://www.youtube.com/watch?v=00PKV5xCL24](http://www.youtube.com/watch?v=00PKV5xCL24)
..And now for something completely different.

http://www.youtube.com/watch?v=2Y8oX1ZxSuM&feature=related

Thanks.