IMGD 5100:
Immersive HCI

Travel

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Overview

- Travel
  - Getting from one place to another

- Wayfinding
  - Means knowing
    - Your current location (here)
    - The location of your destination (there)
    - A (partial) route for getting there from here

- These are related, but are really two large separate problems

Travel: Key Research Problems

- Limited physical space, possibly infinite virtual space
  - Think Holodeck

- Different types of travel
  - Walking, running, turning, side stepping, back stepping, crawling, quick start/stop, ...

- Need to do other things while traveling
  - Usually, travel is not the goal of your current task

- It is very easy to get (cognitively) lost in virtual reality

Support for General Walking

- Multi-sensory cues
  - Visual
  - Auditory
  - Tactile
  - Kinesthetic
  - Vestibular
  - Cognitive

- Each technique used for travel has more or less support for each of these
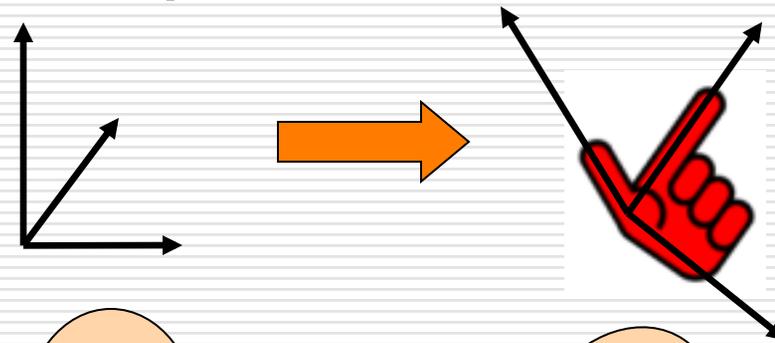
Overview of Travel Approaches

- ☐ Gestural
  - ■ Hand
  - ■ Head
  - ■ Foot (walking in place)
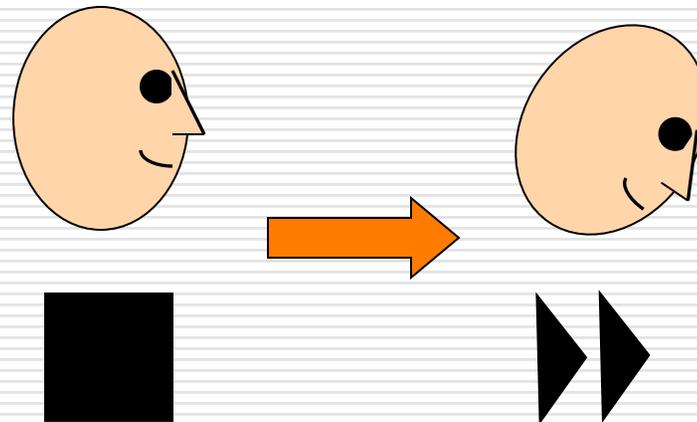 - ■ Body (real walking, re-directed walking)
- ☐ Device
  - ■ Hand-held devices (joystick, gamepad, 2D mouse)
  - ■ Platforms
    - ☐ Passive (tilt, pressure, VirtuSphere)
    - ☐ Active (treadmills, steppers, CirculaFloor)
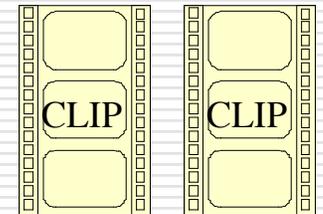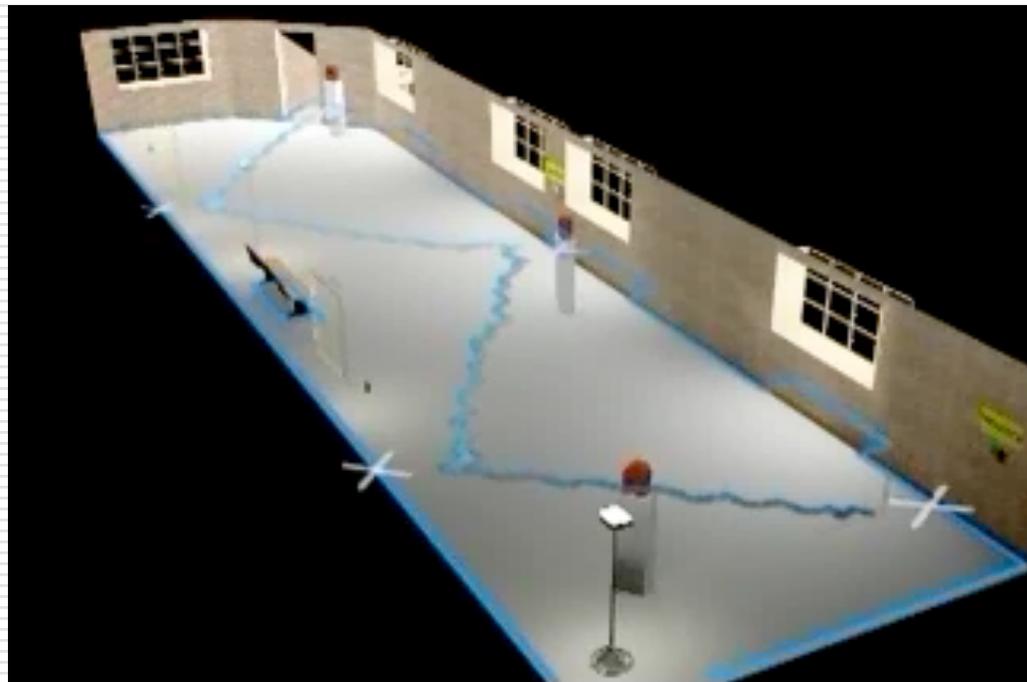
Gestures for Travel

□ Hand typically...

□ Head...

Gestures (cont.)

- ☐ Walking in place (Gaiter [Templeman])
  - ■ Forward/backward/side-step gestures
  - ■ Go prone, run, small real steps

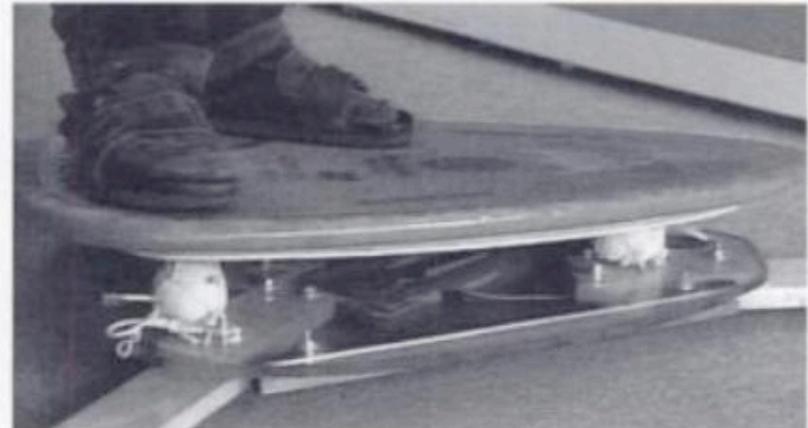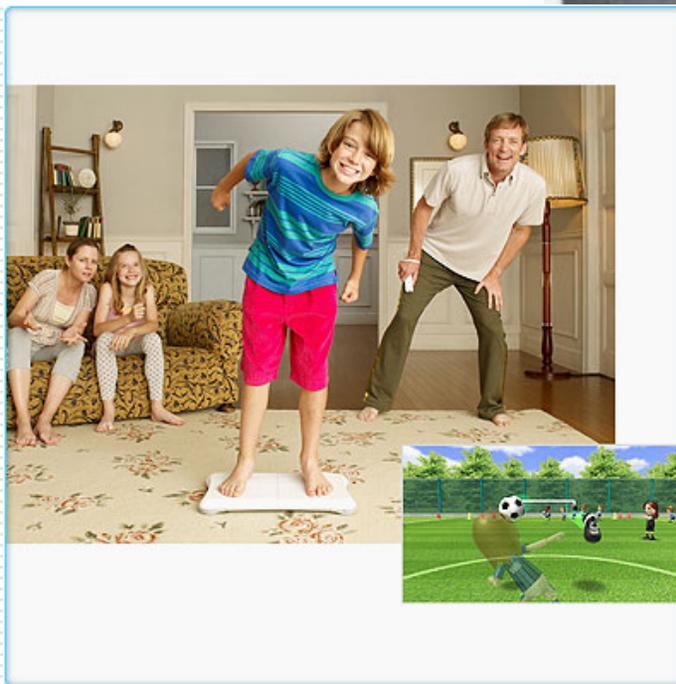# Gestures (cont.)

- ☐ Redirected walking (UNC-CH)

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Devices

- ☐ Hand-held
  - ■ Mouse, joystick, gamepad, WiiMote, etc.

Platforms
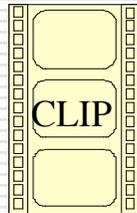
- ☐ Passive
  - ■ Tilt boards
  - ■ Wii Fit

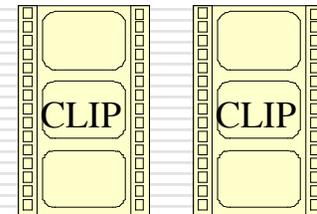# Platforms (cont.)

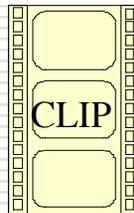▫ VirtuSphere

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Platforms (cont.)

☐ Virtual Perambulator (Iwata 1996)

Platforms (cont.)

□ Torus Treadmill
(Iwata 1999)
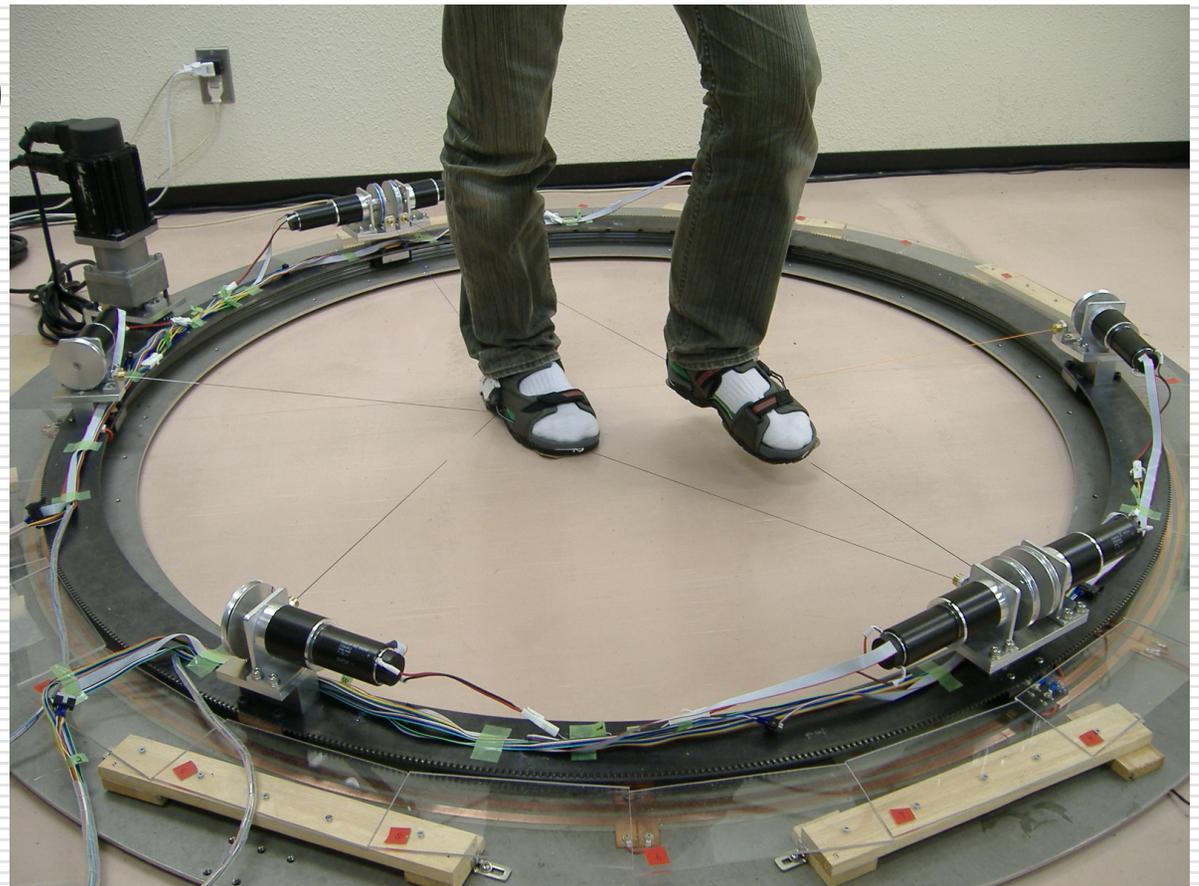
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Platforms (cont.)

- GaitMaster

  (Iwata 2000)

Platforms (cont.)

□ Powered Shoes

(Iwata 2006)

Platforms (cont.)

☐ String Walker

(Iwata 2007)

CLIP

Platforms (cont.)

□ CirculaFloor

(Iwata 2004)