CS-525H:
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
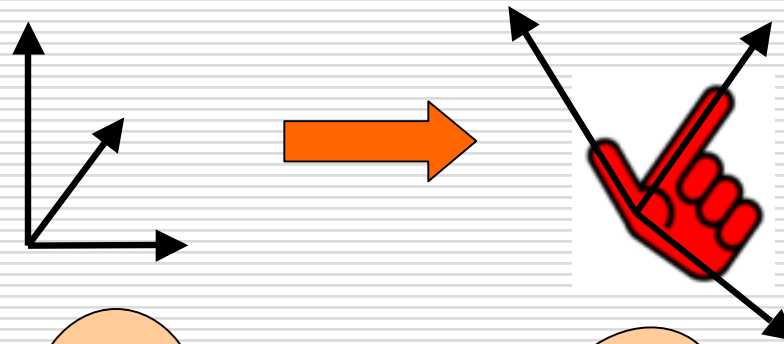
- Gestural
  - Hand
  - Head
  - Foot (walking in place)
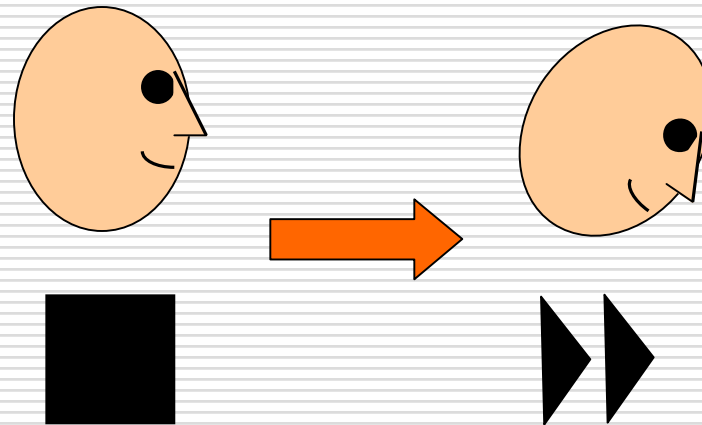 - Body (real walking, re-directed walking)

- Device
  - Hand-held devices (joystick, gamepad, 2D mouse)
  - Platforms
    - Passive (tilt, pressure, VirtuSphere)
    - Active (treadmills, steppers, CirculaFloor)
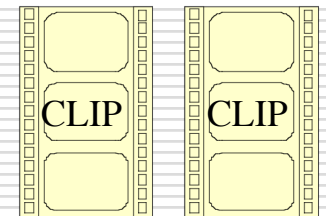
Gestures for Travel
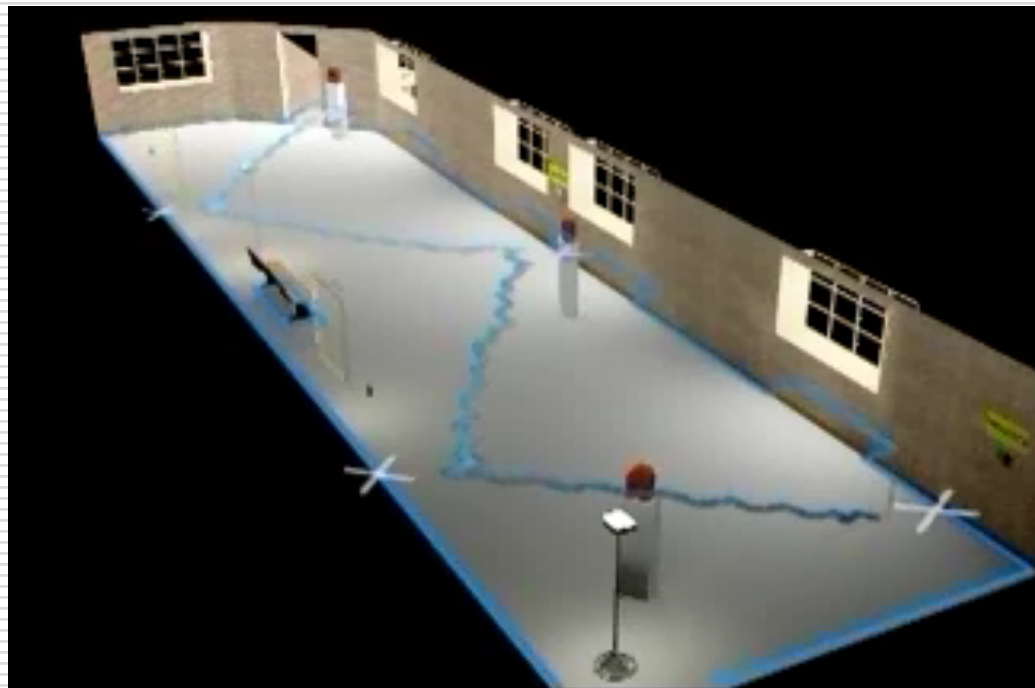
- ☐ Hand typically…

- ☐ Head…

Gestures (cont.)

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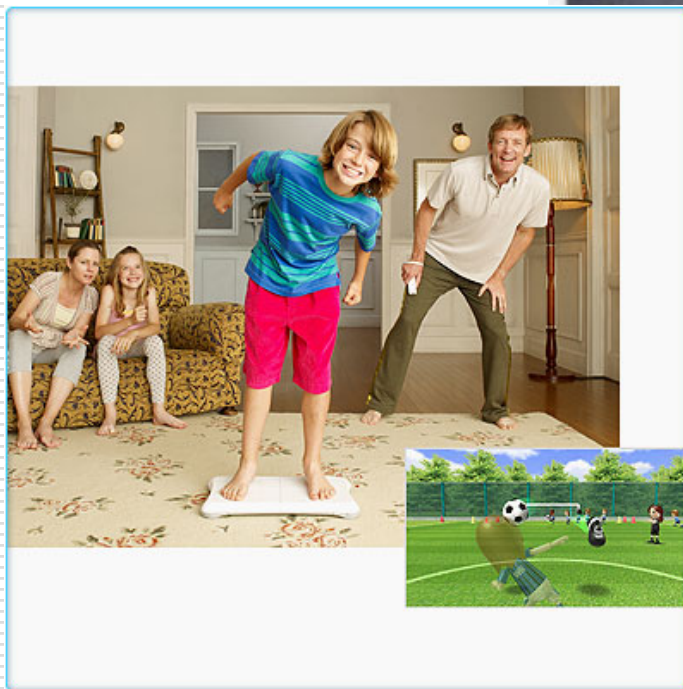
Gestures (cont.)

☐ Redirected walking (UNC-CH)

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Devices

□ Hand-held
- Mouse, joystick, gamepad, WiiMote, etc.
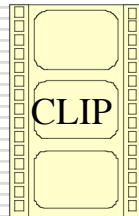
Platforms

□ Passive
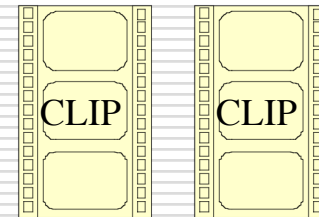 - ■ Tilt boards
  - ■ Wii Fit

Platforms (cont.)
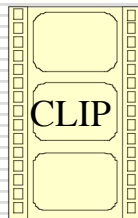
☐ VirtuSphere

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Platforms (cont.)

- Virtual Perambulator (Iwata 1996)

Platforms (cont.)

□ Torus Treadmill
(Iwata 1999)

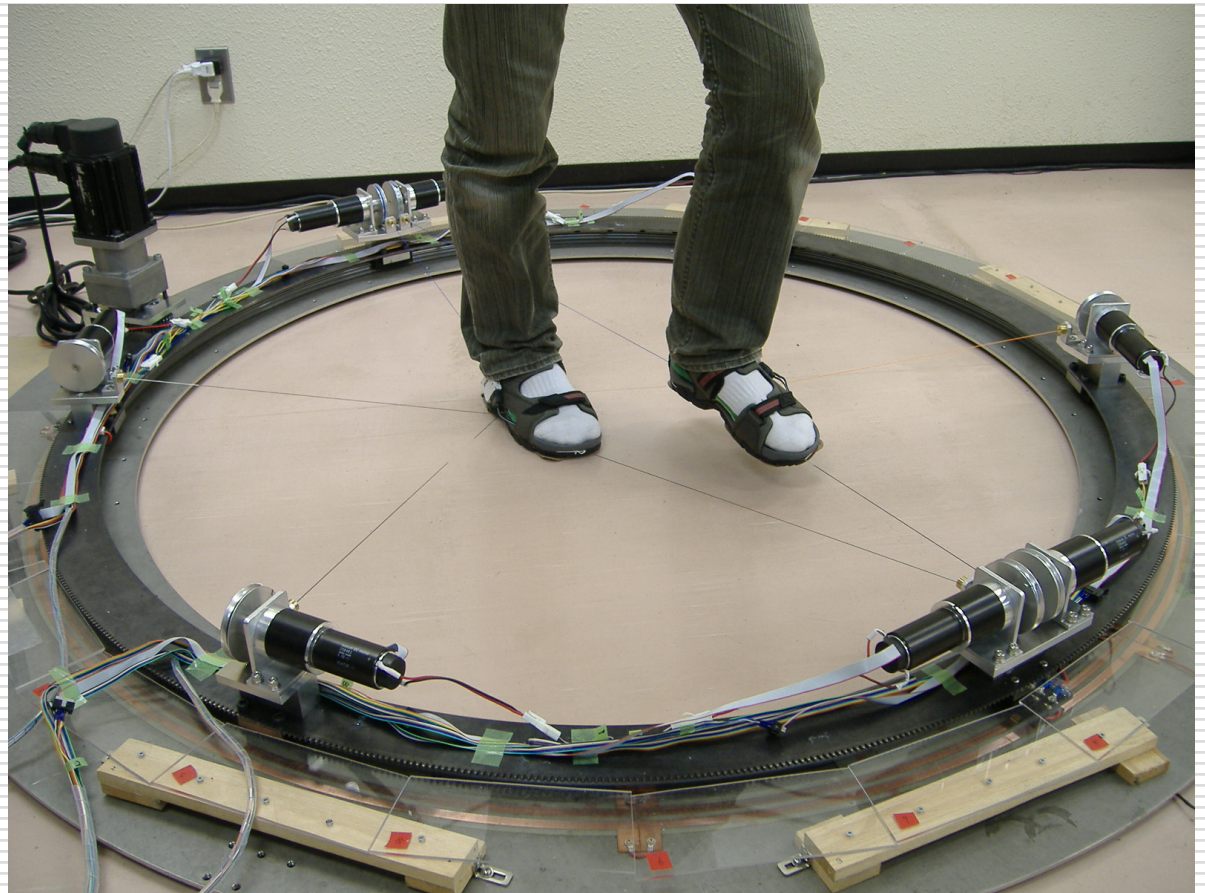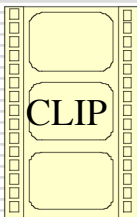# Platforms (cont.)

□ GaitMaster

(Iwata 2000)

Platforms (cont.)

- Powered Shoes

  (Iwata 2006)

Platforms (cont.)

- □ String Walker

  (Iwata 2007)

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Platforms (cont.)

- ☐ CirculaFloor
(Iwata 2004)

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