User Interaction: Ubiquitous Computing

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INF 133 Fall 2010
Technology: Redefining the Interaction Experience

- Implicit input
  - Sensor-based input
  - Extends traditional explicit input (e.g., keyboard and mouse)
- Towards "awareness"
- Use of recognition technologies
- Introduces ambiguity because recognizers are not perfect
  - Probabilistic interaction is a new paradigm
Technology: Different inputs

- Large-Screen Touch
- MS Surface

http://www.metacafe.com/watch/618189/microsoft_surface_computing_the_power/
http://www.youtube.com/watch?v=CZrr7AZ9nCY

Overview Images

Proximity range sensor:
- Infrared (IR) receiver
- IR emitter (below receiver to right)

Touch sensitivity:
- Screen bezel
- On sides & back of device

Tilt sensor:
- Inside device, in plane of the display
- 2-axis linear accelerometer
Technology: Different inputs

- Textile Interface Swatchbook
  - http://www.youtube.com/watch?v=NKWWa6BvUts
  - http://www.youtube.com/watch?v=Valtk6pXiHY
Technology: Different outputs

- More than eye-grabbing raster displays
  - Ambient: use features of the physical environment to signal information
  - Peripheral: designed to be in the background
- Examples:
  - Dangling String
  - Osaka Ferris Wheel
Technology: Merging Physical and Digital Worlds

- How can we remove the barrier?
  - Actions on physical objects have meaning electronically, and vice versa
  - Output from electronic world superimposed on physical world
Application Themes

- Context-aware computing
  - Sensed phenomena facilitate easier interaction
- Automated capture and access
  - Live experiences stored for future access
- Toward continuous interaction
  - Everyday activities have no clear begin-end conditions