ICS 105: Project in HCI

Hot Topics in HCI Research

hot research topics

- HCI is a very active research area
  - we've passed a knee in the technology curve
    - yes, computers will get better, faster, smaller…
    - … but the question is what to do with them
    - the evaluation criteria change (the iMac effect)
  - when was the last time you saw a non-interactive computer?
    - even embedded devices will frequently interact
  - CHI 2001 had more participants than ever before (>3000)

so what is hci research?

- new kinds of widgets?
  - well, a few, but not much
- new cognitive models
  - that's *soooo* 1986
- new ways to imagine using technology
  - new ways to encounter technology
  - new relationships between technology and the world

two hot topics

- tangible (or ubiquitous) computing
  - "off the desktop"
- richer interaction models
  - hyper-responsive systems

ubiquitous computing

- extrapolate technical trends
  - computers getting smaller, cheaper
  - sensors getting cheaper, better
  - communication getting faster, smaller
- a world of ubiquitous computing
  - push computation into everything
    - doors, windows, tables, pens,
  - ubiquitous computing is invisible
    - there's so much of it, you don't even see it
    - you interact with computationally-enhanced devices

ubiquitous computing

- research problems for interaction
  - how do the physical and virtual worlds meet?
  - how does information move from one to the other?
  - what do we interact with when there's no "interface"?
  - how can computers sense the world?
  - how can many different devices be managed?
  - what physical skills can we take advantage of?

video

- Wellner's Digital Desk

the digital desk

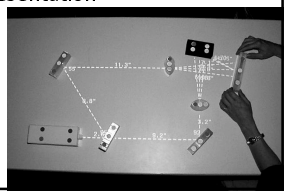
- digital desk was c. 1991
  - integration of real and virtual
    - easier in one direction...
  - technology limitations
    - e.g. finger tracking, image processing
  - very general domain
    - general office use
    - what about applications for the digital desk?

video

- MIT's "Illuminating Light"

Illuminating Light

- "tangible computing"
- application-specific focus
  - helps ground the scenario
  - also, very visual/spatial task
- multiple levels of representation



video

- PARC's manupulative UI

manipulative UI

- moving "the interface" beyond the screen
  - thinking about interaction with devices
  - specialised forms of interaction exploit physical skills

video

- Microsoft's Easy Living

Easy Living

- "augmented environments"
  - how can computer systems augment the physical world?
    - respond to my presence
    - respond to my actions
  - open problems
    - the interaction of multiple people in a space
      - "thermostat wars"?
    - privacy problmes

video

- domain objects

domain objects

- early example of highly responsive UI
  - computational demands low
  - interactive demands high
  - look at the role of animation
  - a richer interactive experience

video

- Alias|Wavefront

Alias|Wavefront

- expanding the range of interaction
  - bimanual input
    - dominant hand performs actions
    - nondominant hand sets the frame

summary

- the focus is not on *interfaces* but *interaction*
  - how do people encounter technology in the world?
  - how do they recognise how it works?
  - how do they fit it in to what they need to do?
  - how do they fit it in to working patterns?
- we're skilled at interacting in the real world
  - so, let's leverage those skills
    - rich interaction: bring in more of the world
    - ubiquitous computing: the interface *is* the world

remaining classes

- no lectures next two weeks
  - next week: building furiously
  - following week: lab evaluations
  - last teaching week: presentations to class
  - finals week: final reports due