CS 449: Human-Computer Interaction

Spring 2013
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MC 4063
Take Aways

• Quick course overview
  – What is HCI?
  – Why study it?
  – Understanding the course.

• Overview of Course Syllabus
  – Posted on-line (under development)
  – Course components and due dates
Human-Computer Interaction

• **Human:**
  – The user of a software application or hardware device

• **Computer:**
  – The physical device, artifact, or hardware that provides some service to the human, typically via a computer program

• **Interaction:**
  – The communication between the human and the computer
What is HCI?

From James Landay
What is HCI?

Mice influence design

Organizational & Social Issues

Task

Design

Technology

Humans
What is HCI?

Spreadsheets create tasks

Organizational & Social Issues

Task

Design

Technology

Humans
What is HCI?

People learn to use apps

Task

Design

Technology

Humans

Organizational & Social Issues
What is HCI?

Organizational and Social Issues Profoundly Influence Technology

Task

Design

Technology

Humans

Organizational & Social Issues

Diagram:

- Organizational and Social Issues
- Technology
- Humans
- Task
- Design
What is HCI?

• The discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.
  – This course focuses on design and evaluation
Design

• Software engineering
  – Given task for software, elicit specific requirements, “design” an application

• Dictionary
  – To plan and fashion the form and structure of an object.

• HCI
  – Precedes “Task identification” stage
  – Figure out what should be built, and how artifact to be built will be used
Why study HCI

- Design is more difficult
- Systems do more and less
- Computers are more ubiquitous
- People neither know nor like computers
Understanding the course

• Distinction between designing a user interface and designing an application
  – UI
    • You know what the application should do
    • You design an interface that is simple and clear
  – Designing an application
    • Need to understand what should be built (and why?) before beginning
IDEO Design Philosophy
What are some characteristics of Ideo’s Design Process?

• Capture domain knowledge from experts
• Identify specific breakdowns
• Brainstorm solutions to address those breakdowns
• Cross-pollinate ideas
  — Pull what’s good from different design sketches
• Prototype solutions, evaluate, and then try again
• Develop a functional prototype and evaluate “in-the-wild”
Design in this Course

• Step-wise process:
  – Define a new way of working
  – Define how software integrates with that new way of working
  – Evaluate
  – Define and architect the system itself
  – Evaluate
  – Prototype the system at various levels, evaluating at each level

• To do this
  – Need to understand what is done now
  – Need to understand why people do things
    • What are goals and motivations?

• Design = defining a new way of working, supported by technology
Contextual Design

• Explicit process that supports design of software
  • Do contextual inquiry
  • Develop models of work for people you study
  • Consolidate these models to produce a single picture of your user
  • Redesign how user will work with your system as a component
  • Define the overall structure of your system to work with user’s new work process
  • Mock-up and test with customers
  • Implement

9 weeks
No computers
Course Syllabus

And Questions?
Course Resources

• Professor
  – Edward Lank

• TAs:

• Textbook (on 1 day reserve)
  – *Contextual Design* by Beyer and Holtzblatt

• Other references (on 1 day reserve)
  – *Rapid Contextual Design* by Holtzblatt et al.
  – *Interaction Design* by Preece et al.
  – *Designing Interactive System* by Benyon, Tuner and Turner

• Web page
  – http://www.cs.uwaterloo.ca/~lank/CS449/
Course Components

• Assignments
  – Two small assignments worth 5%
  – Group based
  – Excellent/Pass/Fail

• Course project
  – Main component of the course, worth 50%
  – Small group (3 – 4 students)

• Final worth 45%
  – Scheduled by exam office
Assignment 1

• Posted tonight
  – Select three different accessible groups to study
  – Email me the group, your group members, and how you will obtain entrée for each group.
  – Due May 17th

• Purpose
  – Get you started with your group
  – Ensure everyone stays on track
  – Allow me to guide group selection
Assignment 2

• Posted tonight
  – Observe people paying at self-serve checkout lanes
  – Due May 17th
  – One Wiki page on course Wiki

• Purpose
  – Off-campus with group
  – Begin to identify elements of good and bad design
    • Look critically at each action
    • What is that for? Why do they do it that way? What if they did it this way?
    • Document these observations
Course Project

• Three phases
  – Develop an understanding of user, task, and breakdowns
  – Identify a specific problem, alternative designs, low fidelity prototypes
  – Evaluate prototypes, implement functional prototype

• Each phase has deliverables
  – Phase 1:
    • Models describing work plus 2-page write-up for design
  – Phase 2:
    • UED + Low-fi prototype sketches + evaluation schedule
  – Phase 3:
    • Final write-up describing evaluation + semi-functional prototype system
Course Project

• Select a group to study and design for
  – Good candidates
    • Real estate agents
    • Wet/field scientists
    • By-law enforcement officers
    • Firefighters
    • Grade four school teachers
    • Newspaper editors
    • Volunteer coordinators
    • Etc. ...
  – Think about entree
Course Project

• Unacceptable candidates
  – Software engineers
  – Students
  – Tourists
  – Gamers
  – Project managers
  – Cell phones
  – Kiosks

• Bad candidates
  – Investment advisors (*)
  – Air traffic controllers (*)
  – Restaurant owners (*)
  – Funeral directors (*)
  – Co-op coordinators (*)
CS 449 Projects

• *Must* design to user needs, not to your whims
• *Must* demonstrate how your proposed system will improve users’ lives
• Proof-of-concept prototyping means designs can take many forms...
• Must be possible using current technology
Pedals: Tablet-based application to support competitive cyclists
Web-based story manager system for newspaper editors
Tablet-based app. to support catering chefs creating event menu
Other Projects

• Newspaper section editors
• Convenience Store Managers
• Teachers: high school math and science, high school physed, grade 4, core french ...
• Stage Managers
• Recruiters
• Amateur Cinematographers
• Liaison Librarians
• Real Estate Agents
• Admin Assistants in University
• University Safety Officers
• Funeral Directors
More Projects

- High school math and science teachers
- Automotive Service Advisors
- Psychology Researchers
- Engsoc office employees
- Coop field coordinators
- Hobby store owners
- Amateur/Semi-Pro conductors
- Insurance adjusters
- Campus police
- Air traffic controllers
- Investment advisors
- Intermural league coordinators
- Small business owners
- Restaurant owners
Important Dates

• Poster Session 1:
  – June 4th
• Phase 1 write-up + models
  – June 10th
• Phase 2 UED + Sketches
  – June 25th
• Poster session 2
  – July 4rd
• Phase 2 final UED, Sketches, Evaluation plan
  – July 8th
• Poster session 3
  – July 18th
• Final write-up
  – July 30th

• Design Critiques
  – June 6th, July 9th, July 23rd.
• Groups will present their project to others in the class
• Goal is to collect feedback
• Attendance at critiques is mandatory
  – Attendance buys you 5% of your project score
Questions?