CS160: User Interfaces

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Hard to tell the difference between the icons & names
How do you cancel?
Where do I need to turn?
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Work in HCI, Graphics, Vis.
Visual interface design
Perception/cognition of displays

Topics

• Course Overview
• Project Description
• Course Mechanics
Course Overview

Human-Computer Interaction (HCI)

Human
- End-user of program
- Others in the organization

Computer
- Machine the program runs on
- Often split between clients & servers

Interaction
- User tells the computer what they want
- Computer communicates results
User Interfaces (UIs)

Part of application that allows
- People to interact with computer
- Computer to communicate results

User vs. Customer vs. Client
- **User**: term only used by 2 industries
- **Customer**: person who will use the product you build
- **Client**: person/company who is paying you to build it

HCI = design, prototyping, evaluation, & implementation of UIs

Why Study User Interfaces?

Major part of work for “real” programs
- Approximately 50%

You will work on “real” software
- Intended for people other than yourself

Bad user interfaces cost
- Money (5%↑ satisfaction → up to 85%↑ profits)
- Lives

User interfaces hard to get right
- People are unpredictable
Life-Threatening Errors

1995 Am. Airlines jet crashed into canyon wall killing all aboard

– On approach to Rozo airport in Colombia
– Pilot skipped some of the approach procedures
– Pilot typed in “R” and system completed full name of airport to Romeo
– Guidance system executed turn at low altitude to head for Romeo airport

– 9 seconds later plane struck canyon wall

Is the pilot to blame?

http://en.wikipedia.org/wiki/American_Airlines_Flight_965
What is Usability?

Ease of learning
- Faster the second time and so on...

Recall
- Remember how from one session to the next

Productivity
- Perform tasks quickly and efficiently

Minimal error rates
- If they occur, good feedback so user can recover

High user satisfaction
- Confident of success

Who Builds Interfaces?

Ideally a team of specialists
- graphic designers
- interaction / interface designers
- technical writers
- marketers
- test engineers
- software engineers
- customers

Some engineers become very good at user-centered design, but its not for all engineers.
Interface Design Cycle

Building Successful Interfaces

- Task analysis & contextual inquiry
- Rapid prototyping
- Evaluation
- Iteration
Task Analysis & Contextual Inquiry

Observe existing work practices
Create scenarios of actual use
Try-out new ideas before building software

Rapid Prototyping

Build a mock-up of design

Low fidelity techniques
- Paper sketches
- Cut, copy, paste
- Video segments

Interactive prototyping tools
- HTML, Visual Basic, HyperCard, Director, etc.

UI builders
- Fusion, NeXT, Visual Cafe

Fantasy Basketball
Evaluation

Test with real customers (participants)

Build models

Low-cost techniques
  – expert evaluation
  – walkthroughs

Higher cost
  – Controlled usability study

Iteration

At every stage!
Goals of the Course

Learn to design, prototype, evaluate interfaces
- Discover tasks of prospective users
- Cognitive/perceptual constraints that effect design
- Techniques for evaluating an interface design
- Importance of iterative design for usability
- Technology used to prototype & implement UI code
- How to work together on a team project
- Communicate your results to a group

Many of these will be key aspects of your future jobs

CS160 and the CS Curriculum

Most courses for learning algorithms and technology
- Compilers, operating systems, databases, etc.

CS160 concerned with design, implementation & evaluation
- Assume you are comfortable programming
- Technology as a tool to evaluate via prototyping
- Skills will become very important upon graduation
  - Complex systems, large teams
  - Don’t look for large immediate impact in other CS courses
Project Description

Teams

Each of you will individually propose an interface idea
– Fixing something you don’t like or a new idea
– Novelty and creativity will be considered

Groups
– 3 or 4 students to a team
– Work with students with different skills/interests

Cumulative
– Apply several HCI methods to a single interface
Theme: Mobile Applications
Why are mobile apps interesting?

Google’s Android

Video: http://code.google.com/android/

What applications do they show?
Project: Mobile Applications

Projects must use Android

SW emulator available now
May have some HW later

We will assume you are comfortable coding in JAVA (61B)
We will cover some aspects of Android APIs in sections
We will expect you to learn aspects of the APIs on your own

Course Mechanics
TAs, Office Hours, Sections

Teaching Assistants
- Wesley Willett: EECS grad student
- Seth Horrigan: EECS grad student

Office Hours
- Maneesh: TBD in 635 Soda Hall
- Wes: F 10-11am, Soda 511
- Seth: M 9-10am, Soda 551
- Also by appointment

Sections
- T 1-2pm 320 Soda, T 2-3pm 310 Soda
- Will cover new material. You should attend!
- No section this week

Reaching Us

Email: cs160@imail.eecs.berkeley.edu
- Mail sent here will get the fastest response
- Please avoid mailing us directly
Class Wiki

http://vis.berkeley.edu/courses/cs160-sp08/wiki/index.php/Main_Page

Create Wiki Account

Your 1st assignment (due before class Th Jan 24)
Course Petition

Your 2nd assignment (due before class Th Jan 24)

Petition for Admission to CS160

Name:
Email:
Major:
Year: (Freshman, Sophomore, Junior, Senior)
GPA:

Are you committed to remaining in the course through the semester and collaborating with teammates on a group project?

Reasons for taking the course:

What skills you would bring to team projects:

Relevant experience (employment or undergraduate research):

Email: cs160@mail.eecs.berkeley.edu

Both enrolled and waitlisted students should send us petition

Information will determine admission for waitlisted students

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Readings

Readings are very important to the class

- Make sure you do the reading before class
- Midterm will include things only in readings

Most readings will be posted on wiki

- Some require username/password: cs160/cs160Readings

Online reading discussions (ongoing assignment)

- Must post one substantial comment per lecture
- We will not accept late comment
- Will be the major factor in your class participation grade
Grading

Class participation (20%)
Individual assignments (20%)
Group project (40%)
Midterm (20%)

Schedule of Assignments

• Create Wiki Account (individual) (1/24)
• Course Petition (individual) (1/24)
• Individual Project Proposal (individual) (1/31)
• Group Brainstorm (2/7)
• Contextual Inquiry and Task Analysis(2/19)
• Hello-World Application (individual) (2/26)
• Low-Fidelity Prototype (3/11)
• Interactive Prototype (4/1)
• Team Assessment (4/8)
• Pilot Usability Study (individual) (4/15)
• Final Presentation and Report (4/29)
• Final Team Assessment (5/8)

Some weeks lighter than others (plan accordingly)
Most assignments turned in through the wiki
Most assignments oriented around project
Policies

Late Assignments
– Most assignments will be due before class on the due date
– Group assignments will not be accepted late
– Individual assignments lose 20% per day

Cheating (official)
– Will get you an F in the course
– More than once can get you dismissed from Cal
http://www-inst.eecs.berkeley.edu/~cs160

Assessment

Goal of cs160 is to teach you to design and evaluate interfaces
– There is often more than one good design
– But, there are also lots and lots of poor designs
– Be critical of your own work (point out pros and cons)
– As in many design disciplines, grading will be qualitative

Specific assessment guidelines will be given in each assignment

Good communication expected in oral & written presentations

Groups self-assess participation
– Should monitor it throughout the project
– Meet with us as soon as problems emerge
Next Time

The Design Cycle and Brainstorming

- [The Task-Centered Design Process](#), Task-Centered User Interface Design. Chap I. Lewis & Rieman
- [The Perfect Brainstorm](#), The Art of Innovation. Kelley
  Will need username/password for this one