CS 160 Introduction

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Outline

✔ Who am I?
✔ HCI introduction
✔ Course overview
✔ Project description & handout
✔ Administrivia
Who am I?

✓ Professor in EECS
✓ Ph.D. in CS from MIT 1987
  * Robot motion planning, computer algebra
✓ Research interests:
  * Educational Tech.
  * Info. Retrieval & Context-awareness
  * Mobile applications
  * Active polymers
  * Cryptography
✓ Accent is from South Australia
Human-Computer Interaction (HCI)

✔ Humans
  * A person trying to accomplish something
  * Other innocent bystanders

✔ Computers
  * Run application programs
  * Often remote (client-server)

✔ Interaction
  * Human expresses their wishes to the machine
  * The machine responds
HCI Challenges

✔ Understanding people
  * People are not all the same - values very different
  * Identity (traits) are both individual and collective
  * Tension between designing too narrowly and too broadly
  * Diversity in the design team helps
HCI Challenges

✔ Ill-posed problems

* You don't get to start with a “clean” problem - problem solving is only part of design
* Defining the problem is much of the work
* The problem spec may even change during design, e.g. “extreme programming”
Benefits of HCI Skills

✔ CS160 projects are like companies
  * Deal with users: understand and involve them
  * Communication
  * Subjective judgements
  * Flexibility and time constraints!

✔ MIT ME survey
UI design

Task

Design

Medium (technology)

Organizational & Social Issues

People
User Interfaces (UIs)

✔ Part of application that allows users
  * to express their intentions to the machine
  * to interpret results of machine actions

✔ HCD = Human-Centered Design
  * Understanding user needs
  * Design
  * Prototyping
  * Evaluation
  * Final implementation of UIs
Why Study User Interfaces?

✔ Major part of work for “real” programs
  * approximately 50%

✔ Many application programs are mostly UI
  * word proc., spreadsheet, PDAs, email, calendars etc.

✔ You will work on “real” software
  * intended for users other than yourself

✔ Bad user interfaces cost
  * money (5% ↓ satisfaction -> up to 85% ↓ profits)
  * lives (Therac-25)

✔ User interfaces hard to get right
  * people and tasks are complex
Who builds Uls?

✔ A multi-disciplinary team (ideally)
  * graphic designers
  * interaction / interface designers
  * technical writers
  * marketers
  * test engineers
  * software engineers
  * users
How to Design and Build UIs

✔ Identify and understand users’ needs
✔ Task analysis & contextual inquiry
✔ Rapid prototyping
✔ Evaluation
✔ Programming
✔ Iteration
UI Design Cycle

- Design
- Prototype
- Evaluate
Human-Centered Design

✔ Understanding people
  * “Get inside the user’s head”
  * Keep users involved throughout design

✔ Psychology
  * Cognitive: perception, movement, memory
  * Social: motives, personalities, group dynamics

✔ Organizations and knowledge work
Users: Communities and Personae

✔ Remember that individuals belong to multiple communities - not just trait groups

✔ Communities are a unifying influence, and a good space for products to diffuse

✔ Identity (including community membership) is at least as strong a motivator for consumers as product performance
Users: Personae

✔ A portrait of a character (with a name)
* Name: John Canny
* Occupation: Professor
* Values: liberal politics
* Likes: water (swimming, sailing, lying near), Asian food, French food, Italian food, seafood,…
* Dislikes: traffic, bad comedians, being taken for an English person
* Goals: starting up a design group at Berkeley, start family, get good education for kids (probably private)…
More like a story character than a description of a community or group

Q: Why the “extra” detail?
A: Narrative detail is generative
  * It helps you generate design ideas
  * helps you visualize the character, and anticipate their needs and wants
  * With multiple characters, you can explicitly cover a range of user traits
Task Analysis & Contextual Inquiry

✔ Observe existing work practices (real users)
✔ Create examples and 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 users (participants)
✔ Build models
✔ Low-cost techniques
  * expert evaluation
  * walkthroughs
Programming

✔ Toolkits
✔ UI Builders
✔ Event models
✔ Input / Ouput models
✔ etc.
Iteration

At every stage!
Goals of the Course

✔ Learn to design, prototype, & evaluate UIs
  * the tasks of prospective users
  * psychological issues that affect design
  * techniques for evaluating a user interface design
  * importance of iterative design for usability
  * technology used to prototype & implement UI code
  * how to work together on a team project
  * communicate ideas
    + key to your future success
How CS160 Fits into CS Curriculum

✔ Most courses for learning technology
  * compilers, operating systems, databases, etc.

✔ CS160 concerned w/ design & evaluation
  * assume you can program/learn new languages
  * technology as a tool to evaluate via prototyping
  * skills will become very important upon graduation
    + complex systems, large teams
  * skills are relevant for other design courses

✔ All systems have usability issues (unless no-one uses them), even if they are indirect
Project Description

✔ Each of you will propose a UI or app.
  * fixing something you don’t like or a new idea

✔ Groups
  * 4-5 students to a group
  * work with students w/ different skills/interests
  * groups meet with teaching staff every two weeks

✔ Cumulative
  * apply several HCI methods to a single interface
Project Examples

✔ Biosk - support for biology lab work
✔ The environment:
Project Examples

✔ Biosk - the solution

Protocols

Protocol Operations

View | Edit | Delete

Select a protocol and perform an operation:

test
Running the Gel
Centrifuge 15000g for 1 hr
yadayada

Other Options

New Protocol
New Protocol From Template
Project Examples

✔ iCurator: Intelligent museum guide
Project Examples

✔ iCurator: lo-fi and hi-fi prototypes

Welcome to B.A.M.

How to use iCurator
About Berkeley Art Museum
iCurator guided tour
Self-guided tour

Please scan in the barcode nearest you
OR
Choose a point on the BAM map that interests you:

Welcome to B.A.M.

How to use iCurator
About Berkeley Art Museum
iCurator guided tour
Self-guided tour

Click on the map for more detail:

Donations
Museum Shop
Museum Cafe
Project Examples

✔ SLnotes: Live in-class note-taking

Aliasing

✔ Smooth objects (e.g., lines) appear jagged since resolution is too low
✔ Antialiasing - fill-in some jagged places w/ gray scale or primary colors
Project Examples

- Newsalert: Context-aware notification for smart phones

- Based on Qualcomm’s BREW API

- Related: Stock Alert and Context-awareness
Project Suggestions

✔ Home info kiosks (cooking, cleaning)
✔ P2P tools:
  * bargain hunter
  * recommender
✔ Meeting note-taker
  * share notes live
  * work with whiteboard
✔ Memory assistant
  * Use a camera + speech
Project Suggestions (cont.)

✔ Location/context-aware applications
  * What restaurants/sights/public transport is nearby?

✔ Designs for specific lifestyles:
  * People with physical disabilities
  * Elder citizens
  * People with limited English language skills

✔ Project design tools

✔ Learning tools
Administrivia

✔ Registration
* limited by HW and resource constraints to 40-50
* fill-out appeal form if weren’t admitted
* tell us why you should be in the course
  + background, interests, what you can contribute to class
✔ Hand in forms by tomorrow 5pm (we’ll process them by Monday morning).
Administrivia

✔ John’s office hours
  * Tues. 11-12 noon (529 Soda)
  * Weds. 1:30-2:30 PM
  * email jfc@cs for appointments at other times

✔ Teaching assistants
  * Matthew Kam (mattkam@cs.berkeley.edu)
  * Office hours: Mon 4:30-5:30, Thurs 10-11, 417 Soda Hall
  * Hesham Kamel (hesham@eecs.berkeley.edu)
行政部门 (续)

✔ 讨论小组
  * **星期一** 11-12 和 12-1 在 320 Soda
  * 新内容将在讨论中覆盖 -> 您应该参加

✔ 小组从下周开始。

✔ 班级监护人将于下周任命 (需志愿者)。将学生顾虑转达给工作人员。

✔ 第一个作业 (项目提案) 于下星期三到期。

1/22/03
Books

✔ We will mainly hand out papers, give you web links, & refer to lecture slides

✔ Two recommended textbooks

✔ Other recommended books on web page
Assignments (tentative)

✓ Individual
  * 4-5 written

✓ Group
  * 3-4 written assignments
  * 3 presentation/demos with write-ups
Grading

✔ A combination of
  * midterm (15%)
  * final (20%)
  * individual assignments (20%)
  * group project (40%)
    + demos/presentation (group component)
    + project write-ups and exercises
    + ratings given by other team members & class
  * in class participation (5%)

✔ No curve
Assessment

✔ Guidelines will be given in each assignment
✔ You should read readings and prepare for class, participation is graded
✔ Good communication expected in oral and written presentations
✔ Midterm and final
✔ Groups self-assess participation - should monitor it throughout the projects
✔ Meet with us as soon as problems emerge
Tidbits

✔ Late Policy
  * no lates on group assignments
  * individual assignments lose one letter grade/day

✔ Cheating policy (official)
  * will get you an F in the course
  * more than once can get you dismissed from Cal

✔ More information
  www.cs.berkeley.edu/~jfc/cs160/SP03
Summary

✓ Projects - talk to users, produce a proposal by Weds
✓ Go to section next Monday
✓ Next lecture on history of HCI:
  * One reading handed out, two others online