Welcome!

- About me
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- About this course
  - Syllabus, timeline, & resources on-line...
    http://www.cs.drexel.edu/~david/Classes/CS338

Who / what / where / when / why / how

- Prerequisites
- Lectures
- Readings
- Assignments
- Exams
- Grading
- Communication
- Policies
- Questions?

What’s a Graphical User Interface?

- In the narrow sense...
  - a graphical information channel between a user and computer system/application
    - e.g., most Windows & Mac applications
  - any interface with buttons, menus, etc (“widgets”)

- In the broader sense...
  - ATMs, cell phones, navigation devices, etc.
  - GUIs don’t have to have standard widgets!
  - GUIs don’t have to be on your desktop!

- This course focuses on the first group, but we’ll keep the second group in mind
Why GUIs?

- Can present a lot of information in small area but still maintain readability
- Can present different types of information (e.g., pictures, animations)
- Can store “functions” on-screen without forcing user to remember them
- Can provide “direct-manipulation” interfaces with various input

The GUI Life Cycle

Design
Prototype
Evaluate

Focus of this course

CS 337: Psych HCI
CS 338: GUI

To set the stage...

- Some problems with GUIs today:
  - software is “rude”
    - e.g., inappropriate or derogatory error messages
  - software makes unwarranted assumptions
    - e.g., assumes user knows underlying mechanisms, such as saving to a hard drive
  - software is obscure
    - “Use passive mode on FTP proxy?”
  - software exhibits inappropriate behavior
    - open Word document, print it, close it — “Save?”
To set the stage...

- Why do we have these problems?
  - we have a conflict of interest
  - for whom exactly are we developing the system?
- we lack a process
  - how can we think like engineers to evaluate user needs and develop appropriate, usable systems?
- one simple, common, but not-so-good process:

![Diagram](image1)

Developing GUI (or any) software

- Cooper’s 5-component process:

![Diagram](image2)

Multidisciplinary nature of GUI & HCI

- Human side:
  - cognitive psychology
  - ergonomics and human factors
  - sociology
  - linguistics
  - communication theory
  - social and organizational psychology
  - graphic and industrial design

![Diagram](image3)
Multidisciplinary nature of GUI & HCI

- Machine side:
  - computer science
  - engineering
  - computer graphics
  - operating systems
  - programming languages
  - software engineering
  - development environments
  - artificial intelligence

( Clips)

- http://www.designinginteractions.com/interviews/BillAtkinson
- http://www.designinginteractions.com/interviews/StuCard

Users, users, users

- Today we’ll focus on the “human side.”
  Soon we’ll deal with the “machine side.”
- How can we possibly deal with all the complexity of the human side of GUIs?
  - one short answer: It’s hard.
  - one long answer: See CS 337.
  - our short answer: KEEP THE USER IN MIND!

Users at a lower level

- Users embody all aspects of being human
- Being human means having limitations:
  - visual attention (e.g., noticing animation)
  - visual processes (e.g., reading a word)
  - motor processes (e.g., mouse movement)
  - cognitive processes (e.g., memory)
Users at a higher level

- Users have **goals** in using our GUIs
- User-centered design involves...
  - goals: what is the user trying to accomplish?
  - needs: what does the user need to do this?
  - user constraints: what can/can’t the user do?
  - task constraints: what can/can’t be done?
  - and lots of other things to consider

Example: Web site design

- Jakob Nielsen’s “Top Ten Mistakes in Web Design”
  - Using Frames
  - Gratuitous Use of Bleeding-Edge Technology
  - Scrolling Text, Marquees, and Constantly Running Animations
  - Complex URLs
  - Orphan Pages
  - Long Scrolling Pages
  - Lack of Navigation Support
  - Non-Standard Link Colors
  - Outdated Information
  - Overly Long Download Times

- Is good design really this easy?
- These are really just heuristics that keep the user in mind!

Research Question of the Day

- When people surf the web, they have goals.
  - the goals might be very specific
    - e.g., find a paper
  - the goals might be very general
    - e.g., find a cool news article or on-line game
- For typical web browsing, what are users’ goals and how common are these goals?

Research Question of the Day

- Byrne et al. (1999) created a “taskonomy” of web browsing
  - take users from a diverse population
  - observe them in a natural environment
  - analyze their verbal protocols & extract goals
- And at the same time...
  - perform a task analysis of web browsing
  - create categories & subcategories of goals
  - e.g., locate word, image, something interesting...

Research Question of the Day

- Byrne et al. (1999) defined 6 tasks:
  - use information: read, listen, view, download, ...
  - locate: visual search
  - go to: display a new URL
  - provide information: username, address, ...
  - configure: change state of browser
  - react: respond to browser-initiated events

Research Question of the Day

- "Most users are neither beginners nor experts; they are intermediates."

Optimizing for intermediates

- Cooper uses a “bell curve” argument:
  - He thus argues that we should “optimize for intermediates”
  - Is this always the case?
    - for what systems does this make sense?
    - for what systems doesn’t this make sense?
Dealing with beginners, experts

- Let’s not forget the others!
- Beginners need...
  - straightforward “mental model”
  - good, concise topical help (need not be long!)
- Experts need...
  - lots o’ shortcuts
  - directed, specific, unintrusive help

Personas

- One system won’t make everyone happy
- Alesandro’s goals
  - Go fast
  - Have fun
- Marge’s goals
  - Be safe
  - Be comfortable
- Dale’s goals
  - Haul big loads
  - Be reliable

Personas

- How do we develop personas? Research.
  - user interviews
  - subject-matter experts
  - market research surveys
  - etc.
- End production: Each persona represents a class of users in context
  - persona is not an “average person”, but an exemplar or “canonical person” with an associated range of behaviors

Exercise: CS Web Site

- Check out the web site on the next page
- What’s your gut reaction?
  - yikes, ugly
  - yikes, cool
  - just fine
  - yawn
- Ok, that’s out of your system. Now let’s think about our users...
Exercise: CS Web Site

- What are some personas for the CS Web?