Foundations and Principles of Human Computer Interaction
CPSC 481

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Administrivia

Saul Greenberg
- Human computer interaction
- Computer supported cooperative work

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Office hours
- one hour before class on Monday and Wednesday
- by email any time
- by appointment: email or phone to arrange one
- drop in for urgent requests (but no guarantees!)
Out of the way, hacker! A **user** is coming!!!
Psychology

Where is the bottleneck?

3 - Course Introduction
Human Computer Interaction

A discipline concerned with the design, implementation, and evaluation of interactive computing systems for human use.

Articulate:
- who users are
- their key tasks

User and task descriptions

Goals:
- Brainstorm designs
- Participatory interaction
- Graphical screen design
- Heuristic evaluation

Products:
- User and task descriptions
- Throw-away paper prototypes
- Testable prototypes
- Alpha/beta systems or complete specification

Methods:
- Task centered system design
- Participatory design
- User involvement
- Representation & metaphors

Psychology of everyday things
- Task scenario walkthrough
- Usability testing

Low fidelity prototyping methods
- Heuristic evaluation

Refined designs
- Graphical screen design interface guidelines
- Style guides

Field testing
- High fidelity prototyping methods
- Completed designs

An interface design process

4 - Course Introduction
Why an interface design process?

63% of large software projects go over cost
- managers gave four usability-related reasons
  - users requested changes
  - overlooked tasks
  - users did not understand their own requirements
  - insufficient user-developer communication and understanding

Usability engineering is software engineering
- pay a little now, or pay a lot later!
- far too easy to jump into detailed design that is:
  - founded on incorrect requirements
  - has inappropriate dialogue flow
  - is not easily used
  - is never tested until it is too late

Foundations for designing interfaces

Understanding users and their tasks
- Task-centered system design
  - how to develop task examples
  - how to evaluate designs through a task-centered walk-through

Designing with the user
- User centered design and prototyping
  - methods for designing with the user
  - low and medium fidelity prototyping

- Evaluating interfaces with users
  - the role of evaluation in interface design
  - how to observe people using systems to detect interface problems
Foundations for designing interfaces

Designing visual interfaces
- Design of everyday things
  • what makes visual design work?
- Beyond screen design
  • representations and metaphors
- Graphical screen design
  • the placement of interface components on a screen

Principles for design
- Design principles, guidelines, and usability heuristics
  • using guidelines to design and discover usability problems

Objectives

At the end of this course, you will know
- methods for grounding your design in reality
- methods for prototyping visual applications
- methods for evaluating interface quality
- fundamentals of screen design and representations
- how to apply guidelines to interface designs
- how to apply your training in practice and continue your education
How you will be evaluated

Assignment 1
- task centered design and prototyping (13%)

Assignment 2
- usability evaluation of an existing system (12%)

Project
- system (re-)design, implementation and critique (25%)

Exams (50%)
- mid-term (20%)
- final (30%)

You must pass both the exam components and assignment components to pass the course

Labs

Critical to your success in assignments
- elaboration of details
- learn specific skills
- discuss intermediate results
- class feedback on assignment milestones

7 - Course Introduction
Text and additional references

Lecture notes
- sold at cost by the department
- available on the web

Optional programming manuals
- C# / Visual Studio 7 is our implementation platform
- documentation is on line
- you can choose whatever books you need to get you started

Other resources
- see the web site http://www.cpsc.ucalgary.ca/~saul/481/