CSC 484: Human-Computer Interaction

Introduction to the Course

Instructor

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General Information

- How humans interact with designed artifacts.

- Specifically, computer-based artifacts.

- Generically, HCI = human factors + design.

- Topics from both 483 and 484.

Course Objectives

- appreciate importance of user-centered design

- learn about usability

- construct prototype, analyze it

- present *well-reasoned* analyses

- read research literature in HCI

Prerequisites

CSC 307 or 308, and junior or senior standing.

Activities

- Heuristically evaluate usability.

- Conduct pilot usability study.

- Design, storyboard, (prototype).

- Analyze prototype (or existing product).

- Participate in the usability studies.

- Read research literature

- Give oral presentations.

- Participate in team debates.

Textbook and Online Materials

- Text:

    Interaction Design:

        Beyond Human-Computer Interaction

- Textbook website.

- Course website.

Assignments

a. Perform a small-scale, analytic usability study
    of existing software..lec

b. Conduct a usability field study, collect and ana-
    lyze the data.

c. Prepare and present storyboards for some
    aspect of your class project, or for a separate
    design artifact.

Projects

a. prototype + study

b. stuydy + prototype

c. study only

Teams

- software project team

- end-user team

- debate team

- ad hoc assignment teams

Research Papers

Quizzes

Debates

Labs

- assignment work

- project work

- conduct of and participation in usability studies

- team presentations

- quizzes

- debates

Individual Work

Grading

Assignments (3): 30%

Project (4 milestones): 40%

Debate: 10%

Quizzes (5): 10%

Final Exam: 10%

Detailed Schedule

- To appear.

Other First-Day Handouts

CSC 484 Questionnaire:
Areas of Project Interest and Expertise

CSC 484 Assignment 1:
Intro to HCI Eval and Usability Analysis

Now on to Material in the Lecture Notes

I. **Relevant reading.**

A. Textbook Chapter 1.

B. Paper of the week:

*"Investigating attractiveness
in web user interfaces"*

II. **Go over first-day handouts:**

A. Syllabus.

B. Questionnaire on areas of project interest.

C. Assignment 1.

III. **Intro to class (Ch 1).**

A. Book provides framework for lectures.

B. Per book preface, we'll do Chs 1,9, 12.

C. Then remaining chapters.

IV. **On good and poor design (Sec 1.2).**

A. "Good" means certain important traits:

1. easy to learn

2. effective to use

3. enjoyable user experience.

Good and poor design, cont'd

B. Some systematic ways to measure.

1. Experts' judgment.

2. Controlled experiments with users.

Good and poor design, cont'd

C. Bottommost line --

Know the user

V. **High-level ID principles (Sec 1.2.1).**

A. Again, know your audience (cf. Pg 6).

1. The users *RULE*.

2. Know what they're good at and bad at.

3. Understand what they know, don't know.

High-level principles, cont'd

4. Provide familiar interface contexts.

5. Know how they currently do things.

6. Know what they like and dislike.

High-level principles, cont'd

7. *Listen* to them and involve them *fully* in the interaction design process.

8. If in doubt, do things electronically the way they're are done non-electronically.

High-level principles, cont'd

9. Always ask the user what's "aesthetically pleasing" and "elegant".

    a. E.g., book authors don't know me.

    b. I think the marble-based design is dumb.

High-level principles, cont'd

B. The principle of least astonishment.

    1. Simple tasks should be performable quickly.

    2. Complicated tasks performable, OK longer.

High-level principles, cont'd

C. Use "real-world" metaphors *judiciously.*

D. Treasure simplicity.

E. Be prepared to work with people who may
    have vastly different views.

VI. **ID compared to SE (Sec 1.3).**

A. Everybody wants to "run the show".

B. SEs may think they're role is central.

C. IDs may think the same.

ID compared to SE, cont'd

D. A *product manager* should run the show.

1. Has the "vision thing".

2. Oversees and coordinates all the people.

VII. ID and other disciplines (Secs 1.3.1 - 1.3.2).

A. Much similarity between ID, SE processes.

B. End-users play a key role.

ID and others, cont'd

C. Apt analogy to building architects, engineers

   1. IDs = architects -- do the people thing.

   2. SEs civil engineers -- do the product thing.

D. SEs may think they do both, *however ...*

ID and others, cont'd

E. Book broadens our perspectives.

   1. Software deployed many different places.

   2. But, focus of 484 is HCI.

      a. Ideally, 484 has multi-disciplinary teams.

      b. We'll do some role playing.

VIII. **The elusive "user experience" (Sec 1.4).**

A. Highly subjective and very personal.

B. No established science to measure.

C. In 484, you'll get a chance.

D. Start in Assignment 1.

IX. **Process of ID (Sec 1.5).**

A. Very much like 308 requirements process.

B. Book's "design" = *interface design.*

C. "Building interactive versions of the design"
    = *prototyping.*

D. "Inform one another and are repeated"
    = *process iteration.*

ID Process, cont'd

E. ID involves more explicit usability analysis.

1. Usability analysis is a *pervasive step*.

2. Covered in Chapters 9-12

ID Process, cont'd

F. Often missing in SE process is analysis of cognitive and social aspects.

   1. Follows the "know your users" principles.

   2. Chapters 3-5 focus on this.

X. ID goals (Sec 1.6).

A. Usability goals -- how product behaves

B. User experience goals -- how user feels

C. Design principles -- how to achieve goals

XI. Usability goals (Sec 1.6.1).

A. *Effectiveness*

B. *Efficiency*

C. *Safety*

D. *Utility*

E. *Learnability*

F. *Memorability*

XII. **User experience goals.**

A. Highly subjective and personalized.

B. Laundry list top of Page 26.

User experience goals, cont'd

C. Importance historically downplayed in HCI.

  1. Difficulty in quantifying.

  2. But, even Donald Norman has come around.

  3. New HCI research braves this frontier, e.g., this week's reading on "attractiveness".

XIII. Design principles (Secs 1.6.3, and 15.2).

A. List in Chapter 1 is intuitive:

1. *Visibility*

2. *Feedback*

3. *Constraints*

4. *Consistency*

5. *Affordance*

Design principles, cont'd

B. Nielson's usability heuristics more specific:

   1. Visibility of system status

   2. Match between system and the real world

   3. User control and freedom

   4. Consistency and standards

   5. Help users recognize, diagnose and
       recover from errors

Nielson heuristics, cont'd

6. Error prevention

7. Recognition rather than recall

8. Flexibility and efficiency of use

9. Aesthetic and minimalist design

10. Help and documentation

C. Lots of examples online, lots of opinion.

1. Nielson's site is `useit.com`.

2. Mentioned in book is `aasktog.com`

3. Also `baddesigns.com`

D. Look at examples and
   gain your own experience by "doing".