

Non-Traditional User Interfaces

Harvey Mudd College CS182-1 Spring 2006

T/TR 1:15-2:30pm Jacobs B134

Prof. Christine Alvarado

Course Aims and Objectives

As computers move off of the desktop, interfaces are moving away from the traditional windows, icon, menu, pointer (WIMP) paradigm. This class will examine the technological and usability issues in constructing non-traditional (i.e. non-WIMP) interfaces. Styles of interfaces we will examine may include speech and natural language-based interfaces, tangible interfaces, vision-based interfaces, and pen-based interfaces. For each class of interface, we will address the degree to which the interface must rely on recognition or artificial intelligence, and the specific advantages, disadvantages and challenges this "intelligence" introduces.

This course has four central aims, each with a number of associated objectives:

- ❖ **Aim 1:** To give students a basic understanding of traditional user interface (UI) development principles

Objectives:

- Identify the major components of UI design
- Describe and apply the principal UI design techniques

- ❖ **Aim 2:** To familiarize students with a broad range of non-WIMP UI paradigms and to examine how traditional principles apply (or do not apply) to these new paradigms

Objectives:

- Identify the major technical and UI challenges for a number of different UI paradigms
- Describe how traditional UI design techniques do and do not apply to new kinds of interfaces
- Describe how technological challenges and interface goals often work against one another

- ❖ **Aim 3:** To give students an appreciation for the advantages and disadvantages of incorporating intelligence into user interface design

Objectives:

- Identify situations in which intelligence improves usability and situations in which it detracts from it
- Evaluate how system error affects usability
- Explore human perception of machine intelligence

- ❖ **Aim 4:** To teach students to think, speak and write critically about these new interfaces styles from both a technological and user interface perspective

Objectives:

- Critically respond to a research paper
- Identify key points for discussion from a research paper
- Organize and lead class discussion

Basic Information

Time: Tuesday/Thursday 1:15-2:30pm
Place: Jacobs B134
Course Homepage: <http://www.cs.hmc.edu/courses/2006/spring/cs182-1>
Please check the web page regularly!

Instructor Information

Prof. Christine Alvarado
Homepage: <http://www.cs.hmc.edu/~alvarado>
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Office Hours: Mon 2:15-4:15pm, Wed 5:15-6:15pm and by appointment

I encourage you to contact me about any aspect of the course, or anything else. Outside of my office hours, I can sometimes be hard to track down, but I am always available by appointment. In general email is the best way to reach me, but I occasionally do not check email in the evening. If you send me email at night I will respond the following morning. If you really need to get a hold of me at night, you can call me at home (before 9pm). For urgent matters during the day (e.g., you can't make it to class at the last minute for some reason), please call me in my office.

Course Texts

There are two required texts for this course:

1. *The Design of Everyday Things* by Donald Norman
Basic Books, 2002
ISBN: 0465067107
2. *Interaction Design* by Jenny Preece, Yvonne Rogers, and Helen Sharp
Wiley, 1ed, 2002
ISBN: 0471492787

Note: These texts are not available in the Huntley Bookstore. Please purchase them on Amazon. They are also on reserve in the Sprague library.

Course Content

This is a seminar class, and the work load will be focused on reading and analysis instead of programming. The workload in this course consists of five components: reading, participating in class discussion, writing reading responses, completing short assignments or “investigations”, and leading paper discussions. There are no exams or term projects.

Each piece of work in this class is relatively small, but you must take care to manage your time as the different pieces of work will be carried out simultaneously.

Reading

Readings will be taken from the two required texts as well as from recent literature. It is essential that you do the required reading for each class and come to class prepared to discuss it.

Reading Responses

After the first few weeks (in which we will cover basic topics in UI design), the reading assignments primarily will be research papers from recent conferences and journals. For each set of assigned research papers (approximately 12) *except* those that you present (see below) you will write a short (1 page or so) critical response to the reading. I will make it clear when these responses are required (they will not be required during the first few weeks of the course) and I will give you more information about how they should be completed a few weeks into the course.

In-Class Participation

You should come to class prepared to discuss the readings that have been assigned for that day. You will be expected to actively participate in the discussion, contributing thoughtful and original comments. Taking care in your reading and your reading responses will help you prepare for class discussion. *If I find people are coming to class unprepared to discuss the reading, I will introduce reading quizzes that will be factored into your class participation grade.*

Leading Class Discussion (aka "Paper Presentations")

Twice over the course of the semester you (together with a partner) will lead the class discussion of the assigned research papers. Leading discussion involves preparing a short presentation on the assigned readings, as well as steering the class discussion of these readings. You should expect to do some additional background reading and research to prepare to lead class discussion.

Investigations

Finally, there will 8 short assignments, that I will call "investigations", that will ask you to experiment with or think more critically about the topics covered in each section of the course. Each assignment will be roughly the same length, but in the beginning of the course they will be assigned more frequently, as you will not be coping simultaneously with reading responses and paper presentations.

Expected Time Commitment:

My expectation of the hours you will spend on this class is the following:

- Reading: 3-4 hours/week
- Responses: 1-2 hours/week
- Assignments: 2-4 hours/week (more in the beginning of the class, less once we start reading research papers)
- Presentations: 4-5 hours each

If you find you are spending significantly more time than this, please let me know!

Policies

Attendance

On-time attendance for every class is absolutely required to pass this course. This is a small class and class participation is essential to both your learning and class dynamics. If you are ill and cannot attend or an emergency arises, please contact me as soon as possible. I will ask for a dean's note to excuse more than one sick day during the term. If you need to miss class for any other reason, you must get permission in advance.

Late Homework

Late investigations will not be accepted. For the investigations only, you may have one 48-hour extension on any one investigation for any reason. You do not need to ask me in advance to take your extension.

Late paper responses also will not be accepted, but you may skip any one paper response. Again, you do not have to ask for permission. If you complete all paper responses, the last will count as extra credit.

You must lead class discussion on the days that you are assigned.

Grading

Your final grade will be a weighted average of your grades on each course component. Components will be weighted as follows:

- Paper presentations: 15% each (30% total)
- Class participation: 15%
- Reading responses: 25%
- Investigations: 30%

Collaboration

Your work in this class should be in conformance with the Harvey Mudd honor code. I encourage you to discuss the research papers and assignments with others, but all written work must be completed on your own (except when the assignment explicitly states that you should work with a partner, in which case the written assignment should be the work of only you and your partner).

If you discuss an assignment or a paper with anyone else (which, again, is encouraged!) you *must* list that person's name on your writeup.

If you have any question at all as to what is considered acceptable collaboration, please ask.