Welcome to CMSC 434

Dilbert

EVEryone grab an odd-shaped piece of foam and sit down.

We'll continue the design process by pointing to these brainstorm notes and making insightful observations.

The notes are all yellow.

Sweet jeepers!!! You're all engineers!
Douglas Adams

Ford flipped the switch which he saw was now marked
"Mode Execute Ready"
instead of the now old-fashioned
"Access Standby"
which had so long ago replaced the appallingly stone-aged
"Off"

*Excerpt from: So Long, and Thanks For All the Fish*

---

**Why do you think this sign is posted?**

Are there really any *other* options available?
Why list them all?
Which talk would you go to?

HCIL Seminar Series

"Information Scare and Visual Attention in a Focus-Context Time Visualization"  

November 14, 10:15 am  
Room AVW 2490  
Diane Litman  
ARL Laboratories

Which graphic tells the clearer story?

The letters A through G represent chemicals.  
The numbers 1 though 10 represent crops.  
Black = Improved  White = Got worse

images: Bob Waddington
How does this door work?

How many people share this sentiment?
Let’s vote!
Which of these images would you associate with a phone?

Let’s vote!
Which of these would make a better “phone” icon?
Where might you click for info on the IC400C?

"Moore's Law"

"Processing Power"

( This slide is a variation of one presented by Bill Buxton )
**Some History of HCI: Input / Output devices**

<table>
<thead>
<tr>
<th>Early days</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>connecting wires</td>
<td>lights on display</td>
</tr>
<tr>
<td></td>
<td>paper tape &amp; punch cards</td>
<td>paper</td>
</tr>
<tr>
<td></td>
<td>keyboard</td>
<td>teletype</td>
</tr>
<tr>
<td>Later days</td>
<td>keyboard (different types)</td>
<td>scrolling glass teletype</td>
</tr>
<tr>
<td></td>
<td>cursor keys</td>
<td>character terminal</td>
</tr>
<tr>
<td></td>
<td>mouse (different types)</td>
<td>bit-mapped screen (different types)</td>
</tr>
<tr>
<td></td>
<td>microphone</td>
<td>audio</td>
</tr>
<tr>
<td>“Modern”</td>
<td>fancier keyboards and mice</td>
<td>higher resolution screens</td>
</tr>
<tr>
<td></td>
<td>touchscreen and pens</td>
<td>multiple screens</td>
</tr>
<tr>
<td></td>
<td>better voice recognition</td>
<td>“retina” displays</td>
</tr>
<tr>
<td></td>
<td>natural language commands</td>
<td>audio</td>
</tr>
<tr>
<td></td>
<td>digital cameras</td>
<td>video</td>
</tr>
<tr>
<td></td>
<td>simple biometric devices</td>
<td>“force feedback”</td>
</tr>
<tr>
<td></td>
<td>simple computer vision</td>
<td></td>
</tr>
</tbody>
</table>

“Bleeding Edge”
- head-mounted displays
- computer jewelry
- OLEDs, data gloves
- implanted devices
- more advanced biometrics
- autonomous agents

---

**What’s a computer?**

If you asked someone to draw a computer, what parts would they draw?

**Would the CPU be among them?**
- are keyboards & terminals are just artifacts of today’s technologies?
- how will new input/output devices continue to change the way we interact with computers?

**Is an iPhone a computer?**  **An iPad?**  **A dSLR?**
**Everything old is new again?**

The first mouse was in the early 1960s – 20 years before the Xerox Star or Apple Mac or Microsoft Mouse. Are today’s mice significantly different from Douglas Engelbart’s? How? Will tomorrow’s mice be significantly different from today’s? Will we even still have them?

Pen-based input dates back to the late 1950s – almost 40 years before the Apple Newton and almost 50 years before the Microsoft TabletPC push.

Alan Kay presented the idea of a “DynaBook” in 1968, almost 40 years before the current wave of tablets.

What moves technology from research labs and pet projects into the business world and home use?

---

**“Moore’s Law” -vs- Human Psychology**

![Graph showing "Processing Power" vs Human Abilities over time (0 A.D. to 2030).](image)
For example, how do we create a menu?

Do we want a simple design or a complex design?

Should it be narrow and deep or should it be broad and shallow?

Some questions to ask:
• how many things can the typical user remember
  – there can be speed advantages for expert users that have learned where things are on a menu
• are there costs associated with loading a new page
  – an application such as Microsoft Word
    • how much memory does the machine have
  – a series of web pages
    • how much latency if there in the connection

“Make it Usable” can’t just be an add-on thought...
**Human Computer Interaction**

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

**Why an interface design process?**

Many (most?) large software projects go over cost…

When asked, managers gave four usability-related reasons:
- users requested changes
- designers overlooked tasks
- users did not understand their own requirements
- insufficient user-developer communication and understanding

Usability engineering is *part of* software engineering (ie: CMSC435)

- 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
Cost to fix a problem?

The time during development that you notice a change needs to be made

Some Foundations for Interaction Design
Understanding users and their tasks

Designing with the user
• User centered design and prototyping
• Evaluating interfaces with users: qualitative and quantitative

Understanding issues in visual interfaces
• Psychopathology/psychology 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

Implementing Graphical User Interfaces (GUIs)

Understanding the past and thinking about the future of HCI
Some Course Objectives

At the end of this course, you will

Have a better definition of “good design” means.

Be more familiar with a variety of design guidelines and models and how to apply them.

Know different methods for involving the user in the design process and have applied them in your work.

Built a prototype application using good design methods.

Evaluated an interface’s design quality.

Have learned enough about HCI to learn more about HCI!

How you will be evaluated

Homework: 14% of term grade
- There will be four homework assignments during the term.

Projects: 40% of term grade
- Projects will be done in groups of 3 or 4 students.

Exams: 40% of term grade
- There will be a midterm and a final.
- The final might have some material that was covered earlier in the term.

Class Participation: 6% of term grade
Various things will contribute to this portion of the grade. Examples include:
- Participation in various exercises done during class time.
- The Hall of Fame presentations (details to be given in class).

See distributed syllabus for full details…
**Text and additional references**

**Required text**

*Designing the User Interface: Strategies for Effective Human-Computer Interaction, 5th Edition* Shneiderman/Plaisant/et.al. [Addison-Wesley], 2009.

**Recommended texts / readings**

Will be posted to the web page and/or announced in class as the term progresses.

**Course web site:**

http://www.cs.umd.edu/class/spring2012/cmsc434-0101/

---

**Readings for the week:**

Shneiderman/Plaisant: Designing the User Interface  
- Chapter 1

Norman: The Design of Everyday Things  
- Excerpt on ELMS