



Introduction to Human-Computer Interaction

CS 3724
Fall 2005



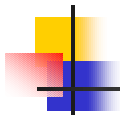
Who are these people?

- Rob Capra
- Pardha Pyla



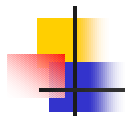
First things first...

- Why are you taking this class?
(be honest)
- What do you expect to learn?
- How do you expect to apply this knowledge?



Unlike other CS classes...

- No proofs
- Only a few equations
- Only a few algorithms
- Multi-disciplinary
 - computer science
 - psychology
 - graphic design
 - industrial engineering



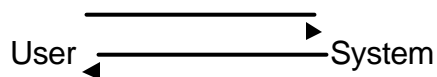
Definitions

- HCI: Human-Computer Interaction
 - computer: any interactive system with digital computation components
 - interaction: communication or dialogue or collaboration between two parties



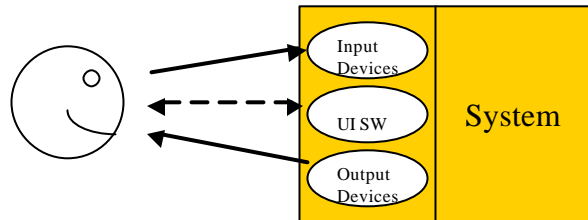
Interactive System

- Interactive systems support human activity
- Any device whose action follows from the actions of its user **and** whose action is at least partly apparent to the user
- 2-way communication



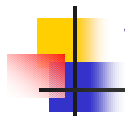
User Interface

- The visible parts of an interactive system through which the user and system communicate



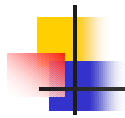
Human Factors

- Human factors generally refers to:
 - Psychology of system users
 - work processes, decision making
 - Physiology of system users
 - ergonomics
- This class is really introduction to HCI



Why should you study HCI?

- Myth: Interaction/UI design is the easiest part of a system, and should be done last
- Myth: Programming is the most important skill for system developers
- We want to support human activity, so design with users in mind! (UCSD)
- Technology will not be useful unless it is also *usable*
- Usable systems lead to more productivity and satisfaction



What are the criteria for success?

- Software engineering goals still important:
 - robustness
 - maintainability
 - cost
- HCI goal – usability:
 - user performance (speed, errors)
 - ease of learning, ease of use
 - user satisfaction, physical comfort




Why Usability Engineering?

- Waterfall models of development do not work
 - Too many unknowns (Brooks: No Silver Bullet)
- Need an iterative discovery-oriented process
 - But at the same time need to manage it
- Demands well-defined process with metrics
 - Specifying usability goals as objectives
 - Assessing and redesigning to meet these objectives
 - Manage usability as a quality characteristic, much like modularity or nonfunctional requirements




How Should We Measure Usability?

- Bottom line is whether the users got what they wanted, i.e., is the client satisfied
- Practically speaking, need to break this down so that we can *operationalize* our objectives
- Our textbook definition:
 - The quality of an interactive computer system with respect to ease of learning, ease of use, and user satisfaction*
 - Can the users do what they want to do in a comfortable and pleasant fashion?



Past & Future of HCI

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- ## History and Future of HCI
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- Much of the class will consider systems that are in use today
 - Class projects may speculate on emerging (but feasible) paradigms
 - To understand present and future, start with the emergence of HCI



History of HCI

- Vannevar Bush, 1945
"As We May Think"
- Vision of post-war activities, Memex
- "...when one of these items is in view, the other can be instantly recalled merely by tapping a button"



History of HCI (con'd)

- JCR Licklider, 1960 "Man-Computer Symbiosis"
- Tightly coupled human brain and machine, speech recognition, time sharing, character recognition



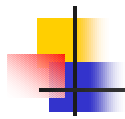
History of HCI (con'd)

- Douglas Engelbart, 1962
“Augmenting Human Intellect: A Conceptual Framework”
- In 1968, workstation with a mouse, links across documents, chorded keyboard



History of HCI (con'd)

- XEROX Alto and Star
 - Windows
 - Menus
 - Scrollbars
 - Pointing
 - Consistency
- Apple LISA and Mac
 - Inexpensive
 - High-quality graphics
 - 3rd party applications



History (and future) of HCI

- Large displays
- Small displays
- Peripheral displays
- Alternative I/O
- Ubiquitous computing
- Virtual environments
- Implants
- Speech recognition
- Multimedia
- Video conferencing
- Artificial intelligence
- Software agents
- Recommender systems
- ...



HCI people at VT

- Doug Bowman
- Dan Dunlap
- Roger Ehrich
- Steve Harrison
- Rex Hartson
- Deborah Hix
- Philip Isenhour
- Andrea Kavanaugh
- Brian Kleiner
- Scott McCrickard
- Chris North
- Manuel Pérez-Quiñones
- Tonya Smith-Jackson
- Deborah Tatar