CS 350: Computer/Human Interaction
Lecture 08 Overview

- Requirements to design
- Activity design goals
  - Design for effectiveness
  - Design for comprehension
  - Design for satisfaction
- Exploring the activity design space
- Activity design scenarios and claims analysis
- **Assignment out:** Homework 2

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Requirements to Design

- Problem Scenarios highlight requirements, set the scene
- Design transforms people’s activities
  - New technology
  - New tasks
  - New experiences
  - Feedback into process

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SBD Design Stages

- Activity Design – specify system functionality, i.e., backend of application
- Information Design – specify presentation of information, i.e., frontend UI of application
- Interaction Design – specify mechanisms for accessing and manipulation information

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Activity Design

- Specify system functionality, i.e., backend
- Main idea is to envision new activities
- Do first because
  - Need to determine what is possible
  - Easier than information or interaction design
  - Can make progress quickly, focus on what system does rather than how it does it
  - Cannot really analyze UI requirements until we know what the system does

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Activity Design Goals

- Design for effectiveness
  - meet real needs, more general than just efficiency
- Design for comprehension
  - users should be able to understand and predict system behavior
- Design for satisfaction
  - user should feel tasks are motivating and lead to feelings of accomplishment

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Design for Effectiveness

- More than just efficiency/productivity. Real question: Is it the “right” solution?
- Innovation is good, but can be too much
  - Build on what is already working
  - Engage stakeholders in **cooperative design**
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Design for Effectiveness

- Determine what parts of a task to support with technology
  - Leverage other aspects of work context, determine how task-related information is distributed (distributed cognition)
- Consider general solutions vs. needs of specific tasks.

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Design for Effectiveness

- Example: on-line clothes shopping
  - Virtual models
  - Shopping lists
  - Arrange by type or by outfit

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Design for Comprehension

- Want to know how users think about a task
- Cannot directly observe
  - Observe behavior, reaction, comments
  - Infer a mental model (vs. designer's model)

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Design for Comprehension

- Use metaphors that users understand to explore new ideas. E.g., typewriter → computer, shopping carts
- Leverage existing knowledge
  - Anticipate and support analogy
  - Look for ways to “break” current understanding.

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Design for Comprehension

- Example: computer is like a typewriter
  - Computer has keyboard with letters, digits, symbols, shift key; Enter key is like Return key
  - Computer also has insert mode and formatting

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Design for Satisfaction

- Even if useful and comprehensible, users need to want to use a tool
- Automating tedious tasks is good, but may remove sources of reward or accomplishment
  - Workers apply personal expertise and knowledge to collect right information and make right decisions
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Design for Satisfaction

- Needs of the individual vs. needs of the group
  - Work may not benefit the worker. E.g., collaboration requires individuals to check in/out documents, leave log records, etc.

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Activity Design and SBD

- Transform problem scenarios (stories about current activities) into activity design scenarios (stories about new functionality, new needs, and how to meet them)
- Address system functionality only, not concerned with details of presentation or physical interaction
- Make claims regarding new features and analyze consequences

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Explore Metaphors

- Brainstorm about metaphors for activities and discuss implications of each
  - Think “out of the box”
- Example: Building and testing electrical circuits
  - Building a circuit is like ...
  - Hooking up a voltmeter is like ...

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Explore Technology

- Brainstorm about technology and discuss implications of each
  - Existing technology
  - Future technology
  - Remember root concept
- Example: Electrical circuit simulator
  - Building a circuit is like using ...
  - Hooking up a voltmeter is like using ...

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Activity Design Scenarios

- Identify claims features that might be changed by introducing technology
- Use metaphors and technology to propose changes
- Rewrite scenario using changes
  - How to actors react, what happens next
- Consider consequences, side effects

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Claims Analysis

- Same idea as for problem scenarios
- Identify a feature of the activity design
- Analysis considers consequences of feature
  - Interleave with scenario writing
  - Document pros and cons of activity, especially as related to problem claims analysis
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In-class Exercise

- Problem scenario: Dr. Hwang builds a circuit... She finds her breadboard, gets parts from the stockroom... She reads the circuit diagram... She inserts parts connected to same node into same row of breadboard...

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In-class Exercise

- Activity scenario: Dr. Hwang builds a circuit in the circuit simulator...
- Activity claim: Building a circuit by drawing a circuit diagram
  + ...
  - ...

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Homework 2

- Exercises 2 & 3 on page 107 of textbook.
- Due at beginning of class on Thursday, will discuss and compare.