**CS 350: Computer/Human Interaction Lecture 19 Overview**

- Interaction design and SBD
- Summary of SBD process
- Prototyping
- Group project
- **Assignment out:** Homework 4
- **Handout:** Revised schedule for rest of term

**CS 350: Computer/Human Interaction Interaction Design**

- Third phase of design of user interfaces
- Goal is to specify the mechanisms for accessing and manipulating task information. Want to lead users to do the right things at the right times.
- Focus on the Gulf of Execution: how to get from user task goal to the physical movements to accomplish the task.

**CS 350: Computer/Human Interaction Stages of Action**

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<tr>
<th>Gulf of Execution</th>
<th>Gulf of Evaluation</th>
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<td>Task goal</td>
<td>Making sense</td>
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<td>System goal</td>
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<td>Action plan</td>
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**CS 350: Computer/Human Interaction Interaction Design & SBD**

- Elaborate activity and information scenarios into **interaction design scenarios** (same stories with interaction details); also called dialog design
- Concentrates on exchange between humans and the system; specify how users will select or manipulate system information
- Make **claims** regarding interaction features and analyze consequences

**CS 350: Computer/Human Interaction Example**

- Problem scenario: Dr. Hwang builds a circuit by getting a breadboard, getting parts from the stockroom... She inserts parts connected to same node into same row of breadboard...
- Activity scenario: Dr. Hwang builds a circuit using a simulation program... She chooses a part and places it. She repeats this for another part, then she connects them...

**CS 350: Computer/Human Interaction Example**

- Information scenario: Dr. Hwang builds a circuit using a simulation program... She notices that it looks very much like a drawing program like OpenOffice Draw. It has toolbars containing buttons with different shapes... The shapes appear to be the different circuit element types...
Explore Metaphors
- Use the same ones as in activity and information design or new ones to brainstorm
- Concentrate on what they suggest with regard to interaction
- Example: Wiring an electrical circuit is like...

Explore Technology
- Elaborate what technology being considered acts like
- Example: Wiring an electrical circuit is like...

Interaction Design Scenarios
- Identify claims features of activity and information scenarios that can be supported by specific choices of interaction
- Rewrite scenario with interaction details
- Consider consequences, side effects

Claims Analysis
- Same as before: identify feature of interaction scenario, consider consequences of feature
- Pros and cons from the point of view of the interaction being presented as related to activity and information claims
- Goal is to maximize overall pros and minimize overall cons

Example
- Interaction scenario: Dr. Hwang launches a simulation program... She clicks on the toolbar button with the resistor symbol. This causes the cursor to turn into the resistor symbol. She moves the mouse to where she wants to place the resistor and clicks the mouse. A horizontal resistor symbol appears in the circuit...

Example
- Interaction claim: Having the cursor change shape to the element selected + ...
  - ...

Example
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**Refining Interaction Design**
- Design eventually must map each action to a specific device with specific visual/auditory feedback, etc.
- Storyboard sketches can be used to elaborate interaction (over text-only)

**Summary of SBD Process**
- Develop root concept (overall vision/rationale), identify stakeholders
- Problem scenarios describe current activities
- Activity scenarios transform problem scenarios into activities using new concepts, new technology

**What is a Prototype?**
- Any concrete, but partial implementation of a system design created to explore system issues
- In particular, a UI prototype is used to explore usability issues
- Four goals of prototyping
  - Exploring user requirements
  - Choosing among alternatives
  - Usability testing
  - Evolutionary development

**Explore User Requirements**
- Illustrate current or future use
- Used in participatory design with stakeholders; record questions, reactions, and ideas for changes
- Low fidelity prototypes – storyboards, paper mockups
- High fidelity prototypes – Wizard of Oz, video, computer animation, scenario machine, rapid prototype, partial implementations
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**Explore User Requirements**
- Issues in choosing how to prototype include
  - Goals and resources of project team
  - Expertise of project team with prototype tools
  - Expectations of audience
  - Presentation context
- Want to be careful that the prototype does not define the final system...

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**Choosing Among Alternatives**
- Prototypes can be built to answer specific questions regarding system function. E.g.,
  - Direct manipulation vs. command language
  - Frequency and amount of feedback
- Expensive to do high-fidelity prototypes, choose what to prototype based on the claims analysis
- Good for exploring risky or critical features that need a go/no-go decision

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**Usability Testing**
- Usability testing is core of usability engineering practice.
- Try out ideas with target users as early as possible
- Ideally an early working version makes the best prototype, but may delay usability testing
- Often use rapid prototyping tools to build temporary, discardable prototypes; can also use low-fidelity prototypes for some parts

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**Homework 4**
- Exercise 3, page 194, of textbook
- Exercise 1, page 224, of textbook
- Due at beginning of class on Thursday. Will compare and discuss as part of class.

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**Group Project**
- Each group develops root concept, stakeholders, problem scenarios based on chosen target users.
- Each group member has written three “prototypes” for the final group project with varying features.
- Evaluate features with respect to the target users and root concept. Decide which features to keep/discard. Write design scenarios using these features. Add new features to scenarios and prototype them.
- Evaluate tools with respect to design scenarios. Which tool can best implement design?