

# CS 465 Principles of UI Design – Homework 2

Due September 10, 2008

1. **Thinking about user interface design.** Identify three **non**-desktop user interfaces that you often interact with. For each of these interfaces:

- Explain the different social/cultural/work contexts in which the interface is typically used. Describe how this has or should have affected its design.
- Identify three strengths of the interface, i.e., what you think the designers did well. Explain your rationale.
- Identify three weaknesses, i.e., what you think the designers did poorly, and how these weaknesses could be addressed with a re-design? Explain.

2. **Learning to listen to users.** Conduct short interviews with three people who often use desktop computers or other interactive systems. Ask each person to describe several (about 3) problems that they often encounter when interacting with their system and/or applications. Ask them how frustrating it is to encounter these problems, how much these problems affect their ability to get work done (productivity), and what they think could be done to correct them. However, do not try to force answers. A good approach is to just keep them talking and periodically prompt the conversation with questions. Use good judgment and know when to move on. Regarding what to hand in, describe the problems discussed, analysis of why they occurred, alternative designs that you believe could alleviate them, and any other interesting observations.

3. **Power Law of Practice.** Ask a friend to be a subject in a short study. Ask the person to type the last 8 letters of the alphabet *backwards* using one hand on a computer keyboard. Create a simple program that prompts for and times the input, records the value, and checks for correctness. Have the subject complete about 20-30 trials. Enter the data into a spreadsheet, placing the trial and recorded time into columns. Create a graph of the recorded time by trial number. Compute the learning constant for the data and explain the result. Also comment on any particular strategies the subject employed to complete the task. Please hand in the source code for the program..

4. **Choice Reaction Time.** Assume error free behavior and that the user knows the target item. Given a static menu with 12 items;

- (a) approximate how long it will take a user to select an item from the menu;
- (b) suppose the first 4 menu items are placed dynamically (8 remain in the static area). Approximate how long it will take a user to select an item when the probability that the target is in the dynamic/static area is:
  - 50/50, 75/25, and 90/10
  - What is the minimum choice time for this dynamic menu?
  - What is the probability split that would cause maximum choice time?
- (c) What are some limitations of applying Hick's Law to real-world performance tasks?