Lecture 15

Keystroke Level Model

- **Definition**: Predicts average time to do a task for an expert user
- **Purpose**: Analyze method efficiency during the design process
  - Compare two different designs for efficiency of performance
  - Evaluate a product for efficiency
- **Texecute** = **Tkey** + **Tpoint** + **Thome** + **Tdraw** + **Tmental**

How to Do it

- **Write down the method for the task**
  - Specify a task with low-level actions
    - key press, mouse pointing action, reach for mouse or keyboard
    - Add mental action at the beginning of a command
  - Add system response time
- **Give times for each action and system response**
  - key press = .2 sec; mouse point = 1.1 sec; reach = .4 sec;
  - mental time = 1.35 sec; draw \( n \) straight-line segments of total length \( L_{CM} = 0.9 n_L + 0.16 L_p \)
- **Sum to compute estimated time for the task**
Example

- TASK: Replace a 5 letter word with another 5 letter word

- METHOD
  - Mental: M[recall command]
  - Home to mouse: H[mouse]
  - Point to word: P[mouse]
  - Select word: 2K[double click mouse]
  - Home to keyboard: H[keyboard]
  - Cut command: 2K[ctrl + X]
  - Type new word: 5K[word]

\[ T_{execute} = T_{key} + T_{point} + T_{home} + T_{select} + T_{mental} \]
\[ = (9 \times 2) + (1 \times 1.1) + (2 \times 4) + (1 \times 1.35) = 5.05 \text{ secs} \]

Caveats

- Cannot predict errors
- Assumes methods are well-learned skill — not learning
- Accuracy within 80%
  - mean +/- 20% mean
  - mean = 5.05 secs, range [4.04 to 6.06 secs]