Lecture 11

Keystroke Level Model

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

- \[ T_{\text{execute}} = T_{\text{key}} + T_{\text{point}} + T_{\text{home}} + T_{\text{draw}} + T_{\text{mental}} \]

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 = \( 0.9 \times n + 0.16 \times l \)
  - 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]

- \[ T_{\text{exec}} = T_{\text{key}} + T_{\text{point}} + T_{\text{home}} + T_{\text{home}} + T_{\text{mental}} \]
  \[ = (9 x .2) + (1 x 1.1) + (2 x .4) + (1 x 1.35) = 5.05 \text{ secs} \]

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]