Questions?

- Project #1: due in one week!
- Homework #4 is out, due in 2 weeks
Today

Design Process

- Idea selection
- Ideation
- Implementation
- Evaluation
- Analysis (interview)
- Definition (personas & goals)
- Acceptance
Idea selection

• Define each idea importance
  – User preference and target user population
  – Available hardware
  – Available software
  – Cost
  – Window to market
  – …

• Rank ideas according the your criteria

• Pick the tops 1-5
  – Depend on resources and stage of the project
Human Information Processor
(Card, Moran, Newell)
Perceptual Processor

- Physical store from our senses: here sight
- Decoded for transfer to working memory
  - Progressive
    - Example: 10ms/letter
  - Selective
    - Spatial
    - Pre-attentive: color, direction...
- Capacity
  - Example: 17 letters
Pre-attentive perception: How many 3s?

85689726984689762689764358922659865986554897689269898
02462996874026557627986789045679232769285460986772098
90834579802790759047098279085790847729087590827908754
98709856749068975786259845690243790472190790709811450
85689726984689762689764458922659865986554897689269898

From Information Visualization, C. Ware
Pre-attentive perception: How many 3s?

From Information Visualization, C. Ware
Where are the cherries?

From Information Visualization, C. Ware
Where are the cherries?

From Information Visualization, C. Ware
Other examples of pre-attentive variables

From Information Visualization, C. Ware
Perceptual Processor

- Decay: 200ms
Perceptual Processor

- **Cycle time**
  - Quantum experience: 100ms
    - *Percept fusion*
    - *Causality*
Working Memory

• Access in chunks
  – Task dependent construct
  – 7 +/- 2 (Miller)

• Decay
  – Content dependant
  – Limit attention span
Long term memory

- Very large capacity
  - Semantic encoding

- Associative access
  - Fast read: 70ms
  - Expensive write: 10s
    - Several Rehearsal and/or recall,

- Context at the time of acquisition key for retrieval

- Noisy
Cognitive Processor

- Cycle time: 70ms
  - Can be modulated

- Typical matching time
  - Digits: 33ms
  - Colors: 38ms
  - Geometry: 50ms…

- Fundamentally serial
  - One locus of attention at a time
    - Eastern 401, December 1972
      - Crew focused on checking the landing gear indicator bulb,
      - Meanwhile the aircraft is loosing altitude (horn, warning indicator…),
      - Aircraft crashed in the Everglades
      - see “The Human Interface” by Raskin, p25

- But what about driving and talking?
Motor Processor

- Receive input from the cognitive processor
- Execute motor programs
  - Pianist: up to 16 finger movements per second
  - Point of no-return for muscle action