INF 133: User Interaction Software: The Human

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The Human

Long-Term Memory

Working Memory

Visual Image Store

Auditory Image Store

Perceptual Processor

Motor Processor

Cognitive Processor

Ears

Eyes

Muscles
Memory

- Three types of memory which build on each other
  - Sensory Memory
  - Short-Term or Working Memory
  - Long-Term Memory
Sensory Memory

- Buffers for stimuli received through senses
  - iconic memory: visual stimuli
  - echoic memory: aural stimuli
  - haptic memory: tactile stimuli
- Examples
  - non cognitive recall
  - Continuously overwritten
Sensory Memory

Aoccdrnig to rscheearch at Cmabrigde unervtisy, it deosn’t mtttaer waht oredr the ltteers in a wrod are, the olny iprmoetnt tihng is taht the frist and lsat ltteres are at the rght pclae. The rset can be a tatol mses and you can sitll raed it wouthit a porblem. Tihs is bcuseae we do not raed ervey lteter by itslef but the wrod as a wlohe.

Note: The meaning is probably not accurate
Short-Term Memory

- Scratch-pad for temporary recall
  - rapid access ~ 70ms
  - rapid decay ~ 200ms
  - limited capacity - 7± 2 chunks
Interlude

How does a web page work?

http://www.codecademy.com/learn
Long-Term Memory

- Repository for all our knowledge
  - slow access ~ 1/10 second
  - slow decay, if any
  - huge or unlimited capacity
- Two types
  - episodic – serial memory of events
  - semantic – structured memory of facts, concepts, skills
  - semantic LTM derived from episodic LTM
Example

Take out a piece of paper

Memorize the photo that is about to appear
Example

Write down as many things as you can remember
Thinking

- Reasoning
  - Deduction
  - Induction
  - Abduction
- Problem Solving
Thinking

- Reasoning
  - Deduction
    - derive logically necessary conclusion from given premises.
  - Induction
    - generalize from cases seen to cases unseen
  - Abduction
    - reasoning from event to cause
      - Sam drives fast when drunk.
      - If I see Sam driving fast, assume drunk.
Thinking

• Problem Solving
  • Process of finding solution to unfamiliar task using knowledge.
  • Many theories of this process
• What is missing from this model?
- Eyes as human output
- Touch as human input
- Sensory Memory
- Social Organization Around the individual
- External cognitive aids
  - Augmented Reality
  - Search
Individuals vary in their abilities

- long term
  - sex, physical and intellectual abilities
- short term
  - effect of stress or fatigue
- changing
  - age

Ask yourself:
will design decision exclude section of user population?
3D U/ls

Holodeck video

http://www.youtube.com/watch?v=JHL5tJ9ja_w
How will these designs affect different people?
Addressing different skills and environments

- “Plasticity”
- Adapting to different environments easily.
- What environments?
Individuals vary in their abilities

- Using an ATM if you are blind
  - https://www.youtube.com/watch?v=Jzah0A6IC5o
How could an ATM be changed to accommodate blind users and not degrading the experience for sighted users?