SWE 503 | Lec 7 | Sep 19, 2025

Cognitive Aspects of HCI (part 2)

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Desert

مكتبة

Algorithm

Jeddah

User Interface

Falcon

تحليل

Pixel

Cultural Heritage

Clickstream

Sand Dunes

بريد إلكتروني

Protocol

In today's lecture:

- Assignments timeline

- Perception

- Memory

- Decision

- Mental Models

- Cognitive Load

Perception

Perception refers to how information is acquired from the environment via the five sense organs (vision, hearing, taste, smell, and touch) and transformed into experiences of objects,events, sounds, and tastes (Roth, 1986)

Which one is easier to read?

What is the time?

What is the time?

What is the time?

What is the time?

Goal of Perception

To present information in a way that can be readily perceived in the manner it was intended

What are the design implications of perception?

What are the design implications of perception?

- Icons should enable users to distinguish their meaning readily

- Bordering and spacing are effective visual ways of grouping information

- Sounds should be audible and distinguishable

- Research proper color contrast techniques when designing an interface:
    - Yellow on black or blue is fine

    - Yellow on green or white is a no-no

- Haptic feedback should be used judiciously

~ 15 minutes

Look for examples of User interfaces that are hard to perceive

Memory

Recalling various kinds of knowledge that allow people to act appropriately.

~ 15 minutes

What do you recall from the initial list of words and why?

What do we know about memory?

What do we know about memory?

- It filters information

- Long term vs short term

- It is easier to recognize than recall

- It can be confused

- ...

Our brains filters infomration

- Attention level ..

- Level of processing ..

- Context .. I've seen this before ..

Design implications of memory?

Design implications of memory

- Reduce cognitive load by avoiding long and complicated procedures for carrying out tasks

- Design interfaces that promote recognition rather than recall

- Provide users with various ways of labelling digital information to help them easily identify it again

Decision

How do we make decisions?

~ 10 minutes

What was the last decision that you took?

- What were the options?

- What were the aids that you used?

- What were the consequences?

How do we make decisions?

- think about what to do

- what are the available options

- what are the consequences of carrying out a given action

- We make a decision

Our goal is to make it faster, easier, accurate for users to take decisions

- What do they care about?

- How easy is it to compare options?

- Level of depth of the decision?

- How big are the consequences?

Mental Models

How do we think about how things work?

More formally

Internal constructions of some aspect of the external world that are manipulated, enabling predictions and inferences to be made
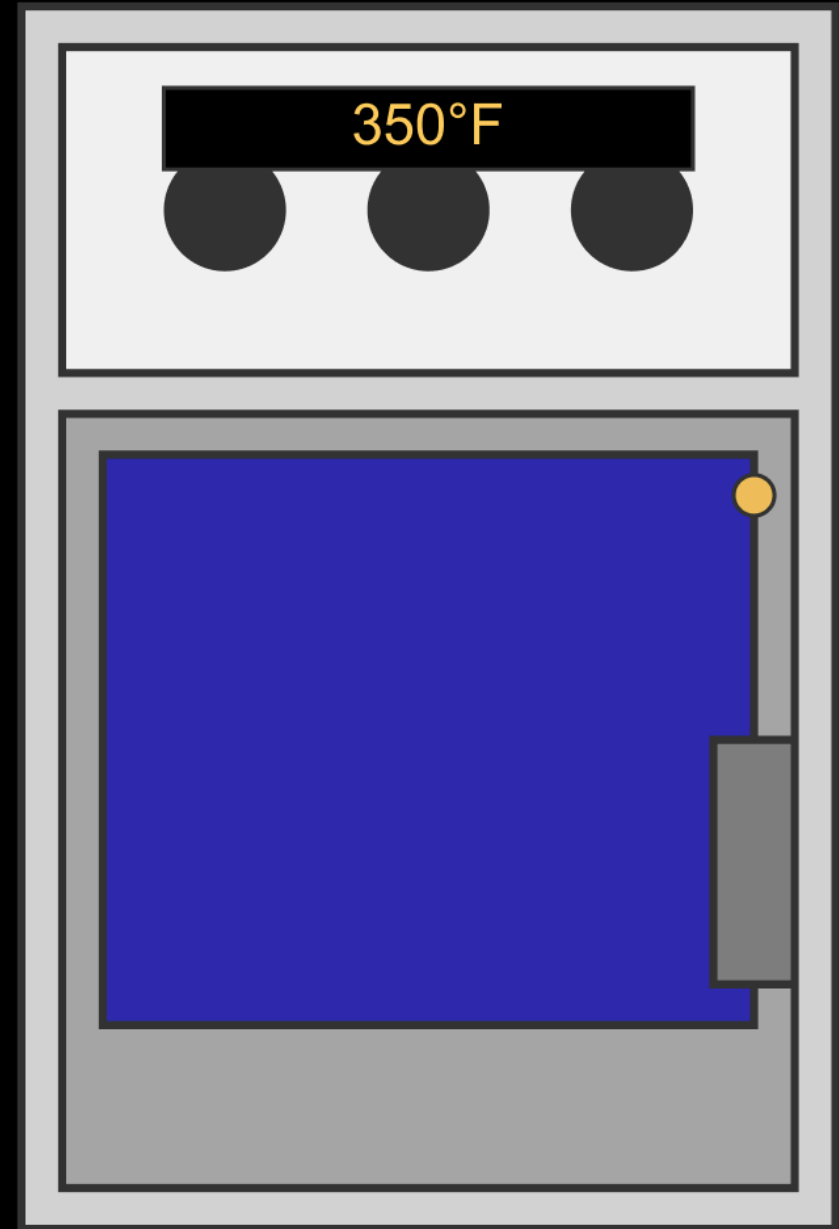
-(Craik, 1943)

What do we know about mental models?

- We generalize from our experiences

- People's experiences are different

- They are not always accurate

Qustion: Which gas oven will heat up faster? An oven set up to 350c or 250c?

350°F

~ 10 minutes

What are some examples when you tried to use one product in a way becuase it worked in another product?

Simple examples ..

- Clicking the elevator button multiple time ..

- Touching your laptop screen ..

- .. etc.

Design implications of mental models

- Understand where your users come from ..

- Build on top of their mental models ..

- Design for when things go wrong ..

- Don't confuse users ..

~ 10 minutes

Extracing the mental model of others.

- Ask a friend about something technical you are an expert in

- Let them explain it to you

- Notice the differences between your mental model and theirs

Next Class:

- Emotional Aspects of HCI