Advanced Interaction Design

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*based on slides by Julie Stanford
Outline

- Interaction design vs. visual design
- Timeline of use
- Implicit interactions
- The basics
  - 80/20 rule
  - Affordances
  - Consistency
  - Mapping
  - Progressive disclosure
  - Visual hierarchy
  - Organizing information
What is Interaction Design?

The practice of designing interactive digital products, environments, systems, and services
Interaction Design vs. Visual Design

How much overlap?
Where does it fit in the process?

Empathize
Define
Ideate
Prototype
Test
What to think about when you are designing
Timeline of Use
People will use your UI over time

First use
- Sign up
- Explore
- Taste
- Excitement

2\textsuperscript{nd} use
- Repeat something
- Try new area
- Accomplish specific goal
- Confirm assumptions
- Getting comfortable

5\textsuperscript{th} use
- Habits/Ruts
- Ignore updates
- Effect of lack of novelty
- Time period between use
- Requirement for user engagement
Timeline how to

• Think about not just first use but 2nd use, and 10th use...how do things change?
• What stays fresh? What becomes tedious?
Implicit Interactions
“Sensing and computation need to be augmented with an understanding of the unstated expectations people have from our interactive counterparts.”
- Wendy Ju

The Design of Implicit Interactions
WHAT IS THE PERSON...

THINKING?

WHAT DOES THE INTERACTIVE OBJECT...

DEDUCE?

SEEING?

PERCEIVE?

DOING?

PERFORM?
Pedestrian makes eye contact, walks towards door → Pedestrian approaches → Doorman waits in uniform → Doorman puts hand on door handle, dramatically

REACTIVE — FOREGROUND

PROACTIVE

Wendy Ju, Design of Implicit Interactions
Wendy Ju, Design of Implicit Interactions
You use a DVR to record a show

DVR suggests a show you might like

DVR records a pre-set weekly show

DVR pre-records shows you might like on its own

Wendy Ju, Design of Implicit Interactions
What does this mean for your UIs?

Think about all the potential ways the user is implicitly interacting with your experience.

Example: Light switch state: On/Off

User’s State:
• Can see the light is on
• Sees the light is on but thinks it should be off
• Doesn’t notice the light is on but would want it off
• Might want to turn it off if it were clear how to
• Doesn’t know if he is responsible for the light or not
Implicit interactions how to

- Consider *all* the mental states that the user might have when they are engaging with your interface (make a list!)
- How will the interface react? What social cues will it use?
and don’t forget the basics...
A high percentage of effects in any large system are caused by a low percentage of variables. Also known as Pareto’s Principle. – *Universal Principles of Design*

“Users use 20% of the features 80% of the time.”
80/20 rule: CS247 microwave redesign

- Removed unnecessary buttons
- Only functionality to increase time
- Most important buttons larger
80/20 rule: Cross-platform design
80/20 rule how to

• List all the things your user may want to do
• Select 20% of them as the key things
• Ensure those 20% of things are easy & fast
• Question your need for the other 80%
Affordances
Consistency

Image source Twitlter
Mapping

A relationship between controls and their movements or effects. Good mapping between controls and their effects results in greater ease of use. – *Universal Principles of Design*
Mapping – which knob goes to each burner?
Mapping – better knob & burner mapping
Visual Hierarchy and Reading Order

**Strong visual hierarchies** guide visual & logical progression by showing what is important.

**Weak visual hierarchies** provide little or no guidance about what is important.

source: http://52weeksofux.com/post/443828775/visual-hierarchy
The First Read: Reading order pillars

1. size
2. color
3. layout
4. spacing
5. style

source: http://thenextweb.com/dd/2015/04/30/the-5-pillars-of-visual-hierarchy-in-web-design/#gref
5 ways to organize information (five hat racks)

- category
- time
- location
- continuum
- alphabet

The fallback order is alphabetical order

Source: *Universal Principles of Design*
Combining it all
What to consider

- Timeline of use
- Implicit interactions
- Basics
  - 80/20
  - consistency
  - mapping
  - progressive disclosure
  - order
  - hierarchy
Edward Tufte on visualizing information

How should I design a bar chart?
Edward Tufte on visualizing information

Source: *The Visual Display of Quantitative Information* by Edward R. Tufte

- typical bar chart
- erase box
- erase vertical axis, except ticks
- add white grid to replace tick marks
- erase baseline, bottom of bars define endpoint
- still, a thin baseline looks good
“This machine is for the aides”: Tailoring Voice Assistant Design to Home Health Care Work

CHI ’23, Bartle et al.

Participants also strongly associated control of the IVA software with control of the physical device. In particular, physically opening or closing the device equated to turning it on and off (discussed in detail in Section 5.2.2). Correspondingly, aides felt that “the aide should choose if it’s open or closed” (A12). While some participants envisioned the IVA only being accessible when an aide opened its case, others imagined it needing to provide reminders to clients in the absence of an aide. This further led to concerns about clients being able to use the device to access or change their care information (e.g., adding extra tasks not on the approved care plan).

Figure 1: The Health Kit (left) and Home Kit (right).

Figure 2: The Health Kit (left) and Home Kit (right).

Figure 3: Closed Health Kit (left) and Home Kit (right).

Figure 4: Underlying device hardware.
Robin Brewer

xPress: Blogging by phone
Shiri Azenkot

Figure 1. The visual wayfinding guidance: (A) Path (B) Path with the Floating Window (C) Path with Anchored Signs, including some Distance Signs and an Action Sign (D) an Action Sign.

https://dl.acm.org/doi/pdf/10.1145/313831.3376516
Other reference books

- *Universal Principles of Design* by Lidwell, Holden, and Butler
- *Designing for Interaction* by Dan Saffer
- *The Non-Designer’s Design Book* by Robin Williams
- *Don’t Make Me Think* by Steve Krug
Inspiration and resources

Inspiration

– https://www.pinterest.com/timoa
– http://pttrns.com/

Icon resources

– Noun Project
– FontAwesome