IN4MATX 231:
User Interface Design & Evaluation

Class 16:
Generalizable Design Principles

Daniel Epstein

Announcements

- Participatory design with Kurt on Thursday,
  Human Performance with me next Tuesday
- What would you like to discuss in Week 10?
- Some ideas:
  - Interface development and software tools
  - HCD as a research method
  - HCD/HCI history
- Post other ideas on Slack, I'll do a poll at some point

Today’s goals

By the end of today, you should be able to…

- Articulate some generalizable design patterns in web and mobile design
- Follow high-level guidelines for developing mobile interfaces
- Find and interpret platform-specific human interface guidelines
- Differentiate iOS and Android platform guidelines
- Articulate what makes a pattern “dark”

Design patterns

- “A general, reusable solution to a commonly occurring problem” (from Wikipedia)
- Typically used in the context of software engineering
  - Example: if you want to ensure there is only one instance of a “thing”, use the **Singleton** pattern
- But patterns can also be helpful in interface design

Interface design patterns

- Simplicity
- Familiarity
- Reduce implementation burden

Interface design patterns

- There are literally books of these
- We'll cover some overall principles, but there's always more to read
- Competitive analysis can help

What did you read about?

Grid-based layouts

- Established tool
  for content arrangement
- Gridded content is familiar
  and easy to follow
- In general, it's good to target
  fewer lines
  - But breaking that rule is important
    for creativity and attention-grabbing

http://printingcode.runemadsen.com/lecture-grid/

Mobile-first design

- “Graceful degradation” vs. “progressive enhancement”
- Plan your design for mobile
- Then make your app *better* with more real estate
  - Add more features
  - Make existing features easier to navigate

Mobile-first, not mobile-only

- Plan your design for mobile
- But consider how the experience should change on desktop, etc.
- Go beyond making everything bigger
  - *Enhance* your design
- I'll focus mostly on mobile principles today, but many generalize

A few principles of mobile design

- A useful initial view
- The “uh-oh” button
- Error prevention
- Follow platform conventions

A useful initial view

- Give users clear calls to action
- Put useful content on the homepage
  - Pinterest's images
  - Put more than navigation buttons
- Make it easy to get back to the homepage
  - Bottom navbar, side navigation menu

Pinterest

Anxiety management app

A useful initial view

The “uh-oh” button

- Functions and buttons are often pressed by mistake
- Undo and redo should be easy
  - Gmail: “undo send”
- Navigating back a page should be easy
  - Breadcrumbs or back buttons (top left)

Gmail

Error prevention

- Providing input with small devices is difficult
  - Add in as much assistance as possible to aid with input
- Add input checks
  - How many digits are in that phone number? Credit card number?
- Use appropriate widgets
  - Date/time spinner
  - Sliders

Follow platform conventions

- Users should not have to wonder whether different words, situations, icons, or actions mean the same thing

- Users should not have to remember app-specific navigation

iOS and Android platform conventions: Human Interface Guidelines

Human interface guidelines

- Created by web/mobile platform developers (Google, Apple)
- Key features:
  - Define rules for visual design and style
  - Specify interactions
  - Establish layout techniques
  - Provide consistency across the platform

Human interface guidelines

- HIGs are recommendations; you can choose to ignore them
  - The goal is to create an optimal experience for a device or platform
  - These guidelines most often follow best practices

iOS Human Interface Guidelines

- Content over UI
- Use the whole screen
- Single / simple colors
- Borderless buttons and widgets

Navigation

- Should be “natural”
- Use a navigation bar to traverse a hierarchy of data
- Use a tab bar for several peer categories
- Use a new page when that page is an instance of an item for another page

https://developer.apple.com/design/human-interface-guidelines/ios/app-architecture/navigation/

Modals

- Grab control of the experience until they are dismissed
- Meant to grab attention for doing one small, specific task
- Make sure the user can back out
- Respect notification wishes
- Use sparingly

https://developer.apple.com/design/human-interface-guidelines/ios/app-architecture/modality/

Interactivity

- Use a key color to denote interactive elements
- Denote “active” and “inactive” components differently
- Be aware of colorblindness

Branding

- It’s important to be distinctive…
- But be careful not to pull a user out of the iOS experience
- Your app does not have to look like a default app, but…

Color and Typography

- Colors are great for grabbing attention, but can be overused
- Use complementary colors
  - Palette definers like paletton.com
- Use a single typeface (font), if possible
  - Built-in fonts are just fine
  - Use font size, and color and weight (bold) to highlight information

https://developer.apple.com/design/human-interface-guidelines/ios/visual-design/color/

Icons

- A good icon is important
- Keep background simple
- Only use words if they are essential or part of a logo
- Leave your icon out of the interface
- When appropriate, use system icons in the interface itself
  - Use as intended

Icon	Name	Meaning
	Action (Share)	Shows a modal view containing share extensions, action extensions, and tasks, such as Copy, Favorite, or Find, that are useful in the current context.
+	Add	Creates a new item.
	Bookmarks	Shows app-specific bookmarks.
	Camera	Takes a photo or video, or shows the Photo Library.
Cancel	Cancel	Closes the current view or ends edit mode without saving changes.
	Compose	Opens a new view in edit mode.
Done	Done	Saves the state and closes the current view, or exits edit mode.
Edit	Edit	Enters edit mode in the current context.
▶▶	Fast Forward	Fast-forwards through media playback or slides.

https://developer.apple.com/design/human-interface-guidelines/ios/icons-and-images/app-icon/

Google Material Design

- Philosophy: interface should look like layers on a sheet of paper
  - Have 3D depth and motion
- Follows many of the same patterns as iOS design in terms of interaction
  - Limited use of modals
  - Use color to emphasize content
  - Be subtle with branding
- But, there are a few key differences

https://material.io/design/

Universal navigation bar

- Android has a navigation bar at the bottom of the screen
  - Sometimes it's a hardware button, sometimes done in software?
  - But it's always present
- iOS implements "back" in-app

iOS

Android

https://medium.com/@vedantha/interaction-design-patterns-ios-vs-android-111055f8a9b7

In-app navigation

- On top in Android, on bottom in iOS
  - Why the difference?
- Android only shows icons
- iOS icons have labels

Android

iOS

https://medium.com/@vedantha/interaction-design-patterns-ios-vs-android-111055f8a9b7

Swiping

- On Android, swiping moves the user between tabs
- On iOS, swiping takes the user back a screen
- Android's always-present back button allows this navigation

Android

iOS

https://medium.com/@vedantha/interaction-design-patterns-ios-vs-android-111055f8a9b7

App settings

- Android apps usually load settings from a “hamburger” button in the top left

- iOS typically have settings as an item on the navigation bar

Android

iOS

https://medium.com/@vedantha/interaction-design-patterns-ios-vs-android-111055f8a9b7

Uniformity

- There are always exceptions
- Not all apps vary the interaction and UI design patterns for each platform

https://medium.com/@vedantha/interaction-design-patterns-ios-vs-android-111055f8a9b7

Uniformity

Android

iOS

Android

iOS

https://medium.com/@vedantha/interaction-design-patterns-ios-vs-android-111055f8a9b7

“Dark” interface design patterns

- Patterns designed to mislead or trick people into doing something they don’t want to do
- They have been around forever
- They have become more subtle and complex over time

https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c

“Dark” interface design patterns

Misdirection

- Interface focuses your attention on one thing to distract you from another
  - Making more expensive options larger or more colorful
- Generalizable technique used in a lot of other dark patterns

https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c

“Dark” interface design patterns

Bait and switch

- Take a design pattern people know, and reverse the effect
  - The “X” button scheduled a Windows 10 upgrade anyways

https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c

“Dark” interface design patterns

Trick questions

- Use unusual wording in questions to promote unintended actions
- “Required opt-out” (unchecking a box) is a more benign alternative

https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c

“Dark” interface design patterns

Confirmshaming

- Guilt a person into opting in to something
- Usually done through wording

https://uxdesign.cc/dark-patterns-in-ux-design-7009a83b233c

Today's goals

By the end of today, you should be able to…

- Articulate some generalizable design patterns in web and mobile design
- Follow high-level guidelines for developing mobile interfaces
- Find and interpret platform-specific human interface guidelines
- Differentiate iOS and Android platform guidelines
- Articulate what makes a pattern "dark"

IN4MATX 231:
User Interface Design & Evaluation

Class 16:
Generalizable Design Principles

Daniel Epstein