CS 147 Introduction & Course Overview

Design Thinking for User Experience Design, Prototyping & Evaluation

Prof. James A. Landay
Computer Science Department
Stanford University

Winter 2022

January 3, 2022

Hall of Fame or Shame?

weather.com

Hall of Shame!

weather.com

Need to click for weather

What is the "**first read**"?

  videos

  ads

  not my local weather!

It used to be worse!

Hall of Fame or Shame?

weather.yahoo.com

Hall of Fame!

weather.yahoo.com

Good!
   aesthetic
   clean typography & icons

Bad!
   image is 1st read & ad 2nd?
   too much **empty space!**

Hall of Fame or Shame?

bing.com/weather

Hall of Fame!

bing.com/weather

Good!
    less clutter
        eye drawn to current temp

Bad?
    maybe a little boring...

Hall of Fame!
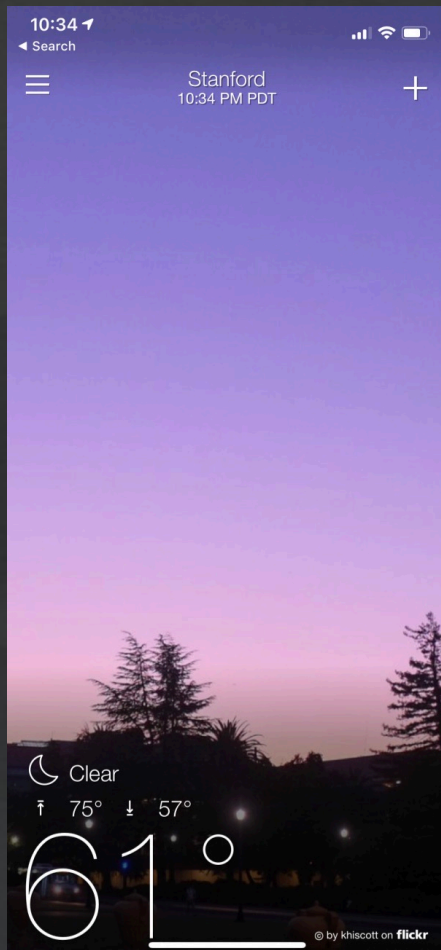
iOS yahoo weather

Good!

aesthetic

clean typography & icons
(new version not as nice)

image recedes to background w/ flick or tap

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Who are We?

Design Thinking for User Experience Design, Prototyping & Evaluation

James Landay

he/him

- Professor in Computer Science at Stanford
  - formerly at Cornell Tech (1 year), University of Washington (12 years), & UC Berkeley (7 years)
  - spent 3 years as Director of Intel Labs Seattle
- PhD in CS from Carnegie Mellon '96
- HCI w/ focus on ubiquitous computing, web design (tools, patterns, etc.), HAI
- Founded NetRaker, 1st in web experience management (sold to Keynote)
- Co-authored The Design of Sites with Doug van Duyne & Jason Hong
- Office Hours: Wed 3:30-4 PM, Fri 4-4:30 PM,
  schedule slots via https://calendly.com/landay/landay-office-hours
- Email: landay@[insert usual Stanford email domain]

Kristina Inouye

she/her

- CS Coterm (HCI, MS&E) & CS Undergrad (HCI)
- Interested in product design, manufacturing, and social impact
- I'm a 5-year varsity athlete, so I love anything related to sports!
- Office Hours: Tues 8 - 9 PM, Wed 4 - 5 PM, and by appointment (https://calendly.com/kinouye3/cs147-oh)

Transportation and Mobility

Technology is fundamentally reinventing the way we move from Point A to Point B. From ride-sharing to car system control applications (think Tesla) to smart navigation, mobility and transportation in the 21st century are constantly challenging and evolving our perceptions of movement. How might we continue to reinvent travel and transport as technology evolves?

Examples: Uber, Waze, Zipcar, Bird, Tesla

Studio: Thurs 7:30 - 9:30 PM (must have good reason)
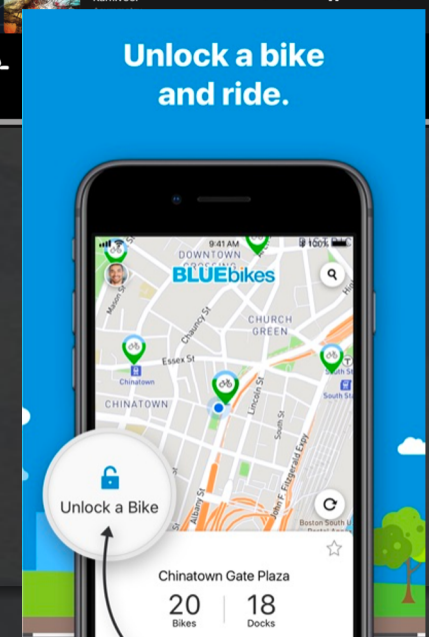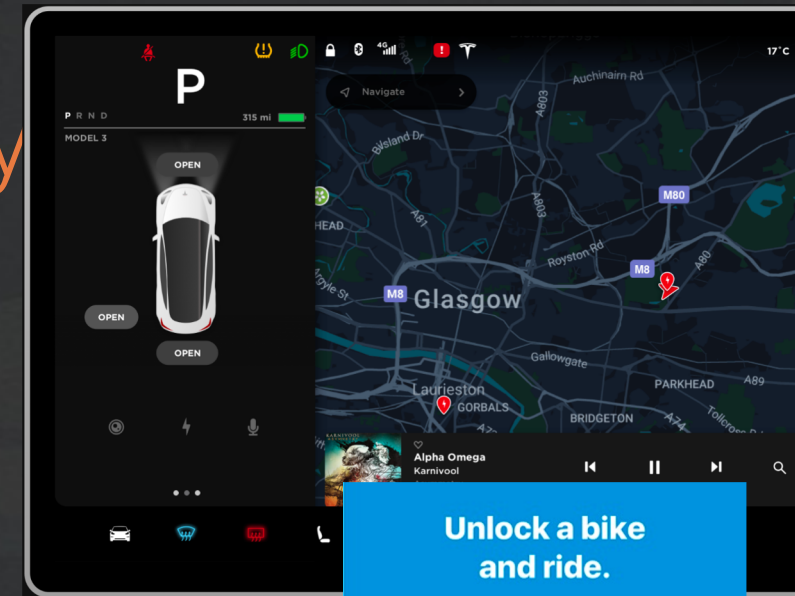
Shana Hadi

she/her

- CS coterm (HCI), undergrad in CS (HCI) and English (CW)
- Interested in human-centered design + developing, storytelling
- I enjoy reading + writing fiction 📝, drinking tea 🍵, and wandering cities 🏙️! I also collect art museum postcards (150+ so far) 🎨
- Office Hours: Monday 4-5 PM, Thursday by appointment

  (https://calendly.com/shanaeh/shana-oh)

Art and Digital Media

Art encourages self-expression, creativity, and social change, and the rise of digital culture transforms how we share ideas and aesthetic experiences that resonate with us and our communities. Our fluid digital media ecosystem offers new forms of interaction across art forms (e.g., food, games, journalism, literature) using a variety of technologies (e.g., AI, social media, virtual reality).

How might we (re)shape the perspectives and power of content creators, curators, and consumers, increase engagement with cultural centers, and expand our understanding of our real and imagined worlds?

Examples: ArchiveOfOurOwn, Goodreads, Google Arts & Culture, OpenTable, Soundcloud, Twitch, Washington Post App

Studios: Friday 11 AM – 1PM, 1:30 - 3:30 PM
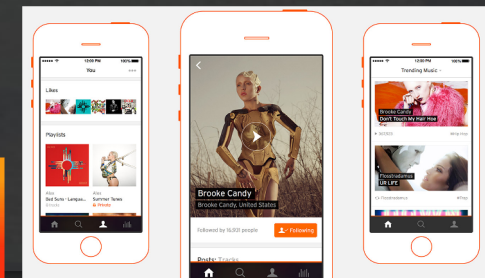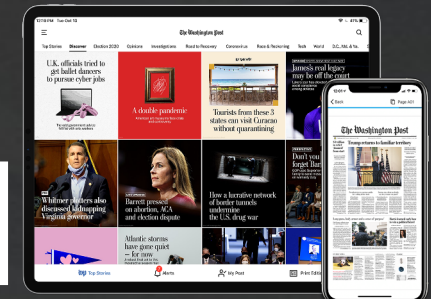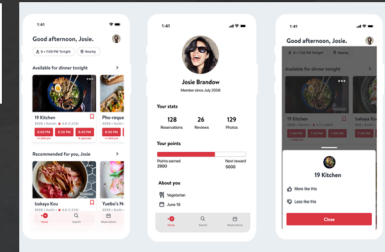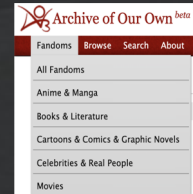
Emily Yang

she/her

- CS Master's (HCI), Finance & Info Systems Undergrad from UMD
- Interested in human-centered design, improving quality of life
- I love making homemade ice cream (25+ flavors to date!)
- Office Hours: Tues 4 – 5 PM / by appointment Tues & Thurs (https://calendly.com/ejyang/cs-147-oh)

Caring From Within

Especially in light of the pandemic triggering a worldwide mental health crisis, users are increasingly using their devices to manage their mental wellbeing. In this studio, we will explore the intersection of technology and health to help us better manage, improve, and care for our own mental health and those around us. With the rapidly growing interest in this field and thus abundant opportunities for innovation, how might we extend help to users and empower them to care for themselves from within?

Examples: Headspace, BetterHelp, Calm, Happify, Talkspace

Studios: Friday 12:15 - 2:15 PM | 2:30 - 4:30 PM
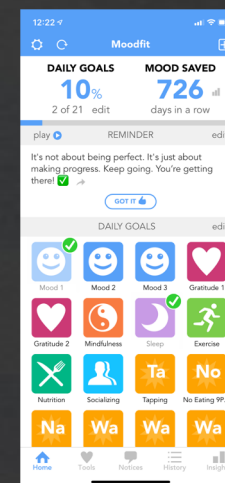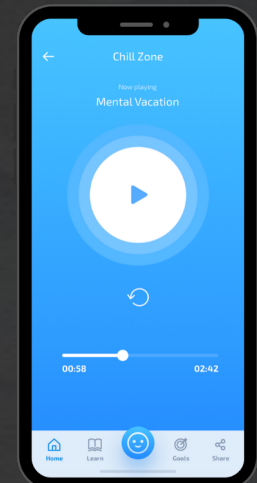
Moodfit   MindShift CBT

Jianna So

she/they

- CS Coterm (HCI), Product Design Undergrad
- Interested in inclusivity, multimodal design, & social impact
- I make laser-cut earrings in the PRL & projection art! ✨
- Office Hours: Mon 12 - 1 PM, Tues & Thurs by appointment

Accessible Design for Different Abilities

Disability is a "mismatched interaction between the features of a person's body and the features of the environment in which they live".

- World Health Organization, 2011

In this studio, we will address this mismatch through multimodal interfaces, inclusive design thinking practices, and accessible features to create products that are better for everyone.

Studios: Friday 9:45 - 11:45 AM, 12:15 - 2:15 PM

Examples: voice assistants, Otter, Be My Eyes, Seeing AI
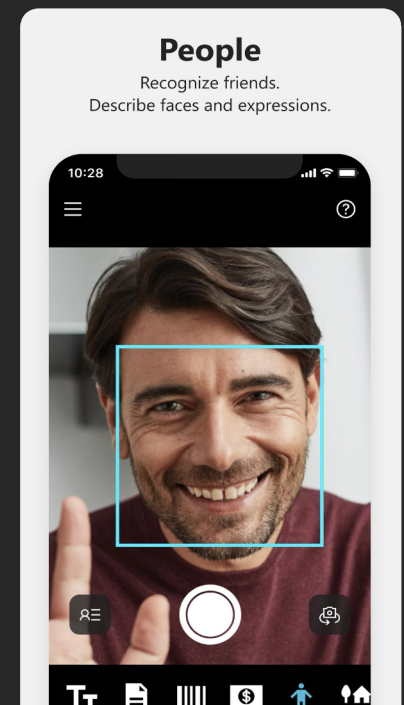
Taylor Lallas

she/her

- CS Coterm (HCI), Econ Undergrad
- Interested in product design, economic empowerment, tech x health
- I love sports (stanford women's tennis <3), being outdoors & baking
- Office Hours: Mon 4 – 5 PM & Thurs by appointment (https://calendly.com/tlallas/tl-cs147oh)

The Virtual Learnscape: AR/VR x Education

Augmented and virtual reality technologies can unlock unique, immersive learning experiences. AR/VR innovation in education technology has started to serve the needs of a range of learners from the casually curious to k-12 students to medical professionals – but it has just scratched the surface of its potential. In this studio, we will explore how we might design game-changing AR/VR educational experiences.

Studios: Friday 8:30-10:30 AM, 11:00AM-1:00PM

<u>OSSO</u>

Low-risk VR medical training

<u>Google Expeditions</u>

Learn history by VR travel through space & time
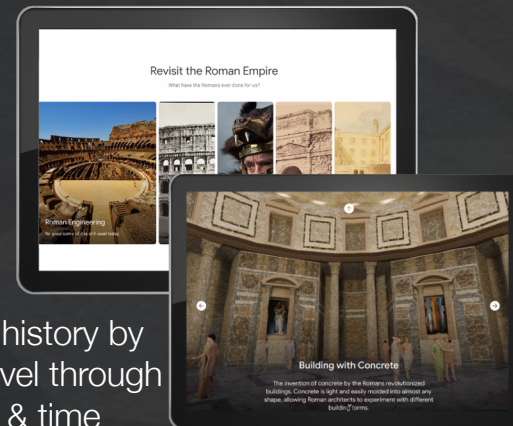
<u>AR in Google Search</u>
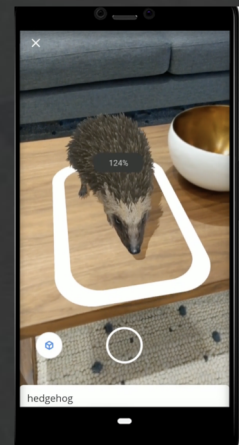
Study an animal by placing it in your own environment

Morgan Zagerman

she/her

- CS Coterm (HCI), Product Design Undergrad
- Interested in human-centered design, bridging the digital and physical design space, and inclusivity
- I love bagels, hip hop dance, and A24 movies!
- Office Hours: Tues 2-3 PM & Thurs by appointment

(https://calendly.com/morganzagerman/morgan-office-hours)

Easing Life Transitions

Whether you are leaving home for the first time, becoming a new parent, starting your first job, or retiring, life transitions change the fabric of your life in an often daunting way.

How can we design solutions for people going through life transitions to increase self-fulfillment, ease fears, and encourage personal growth? How can we help people in life transitions learn the information necessary to enter a new phase of life with confidence?

Studios: Friday 9:45-11:45 AM, 1:30-3:30 PM

Realworld

Simplifying adulthood for new adults

Mint
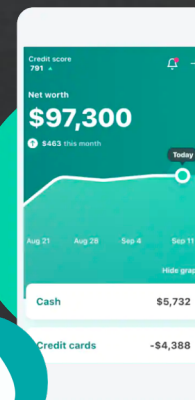
Young Adults / Retirement Budgeting

Mind the Bump

Mindfulness for new parents

Yuyu Lin

she/her

- CS master's (HCI), Industrial Design Undergrad from ZJU
- Interested in product design, human-AI collaboration, creativity
- I love watching videos about history, going to museums
- Office Hours: Tues 10 - 11 AM / Tues, Thurs - by appointment (https://calendly.com/linyuyu/cs147-oh)

Hybrid Collaboration

With the rising popularity of remote work, we are seeing an exponential increase in the need for hybrid collaboration (e.g., face-to-face and online, synchronous and asynchronous, etc.). Based on the requirements of our work, we select, combine, and make the best of different modes to achieve the optimal collaborative experience and group outcome. How might we improve group engagement and success by working with both tangible and digital materials? How might we bridge the gaps between different digital and physical collaboration methods? In this studio, we will explore and propose novel designs for hybrid collaboration experiences.

Studios: Friday 12:15 - 2:15 PM, 2:30 - 4:30 PM

Gather

Pesto
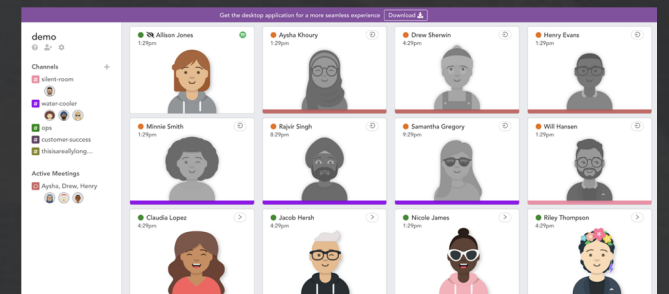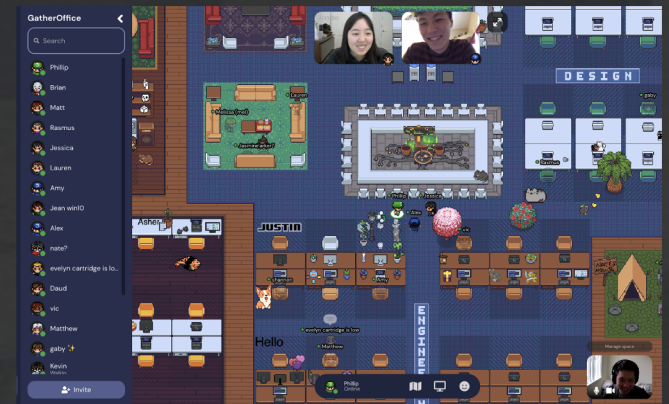
Cat Davis

she/her

- MS&E Coterm (Tech Management), SymSys Undergrad (HCI)
- Interested in the intersection of arts, design, and social good
- I love music, singing, and songwriting!
- Office Hours: Tues 11 AM – 12 PM, Thurs - by appointment (https://calendly.com/cat-davis/cs147-oh)

Becoming Iron-Man

With the help of assistive technology, we can do almost anything. Want to know the scientific name and properties of any plant you see? There's an app for that. Want to know exactly which constellations you're looking up at? There's an app for that, too. The aid and augmentation of human abilities are able to expand the bounds of what we can do. In this studio, we will explore how we can use technology to expand our senses, possibly even giving us new ones. If you could have any superpower, what would it be?

Examples: Plant Identification ++, SkyView, Shazam, Capo

Studios: Friday 9:45 - 11:45 AM, 2:30 - 4:30 PM

Plant Identification ++
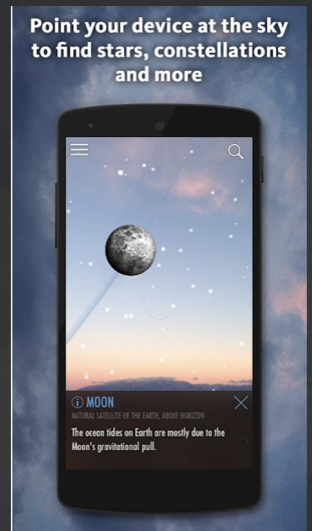
SkyView
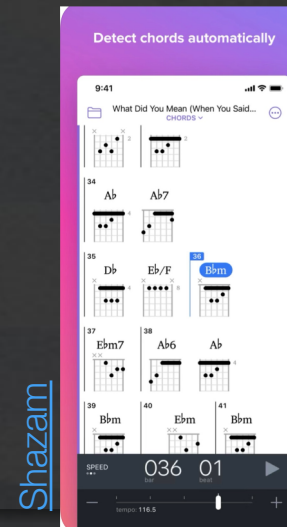
Capo

Shazam
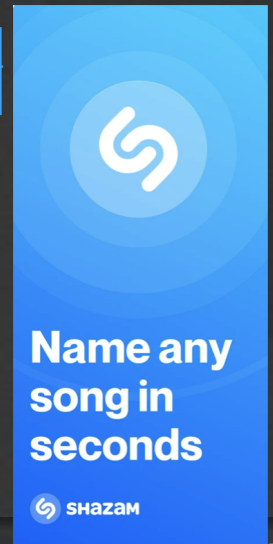
Khuyen Le

she/her

- CS Coterm (HCI), SymSys Undergrad (Cognitive Science)
- Interested in bringing together psychology, HCI, art and design
- I love: trying new art forms, playing with my cat, using public transportation in new places!
- Office Hours: Tues 4 – 5 PM / Thurs - by appointment (https://calendly.com/khuyenle/cs147-oh)

Systemic Justice and Equity

Extreme wealth inequality intertwined with systemic injustice can cripple people's access to essentials like food, shelter, healthcare, education, and legal services. In this studio, we will examine gaps in the social security system to build solutions that tackle systemic issues or lessen negative outcomes for those in a harmful system. ***Our studio will stay cognizant of the potential minimization of serious issues inherent in creating a project within 10 weeks.

Examples: Providers, GapJumpers, Share The Meal, Comeback, Sheboard

Studios: Friday 11 AM – 1 PM, 1:30 - 3:30 PM

Providers
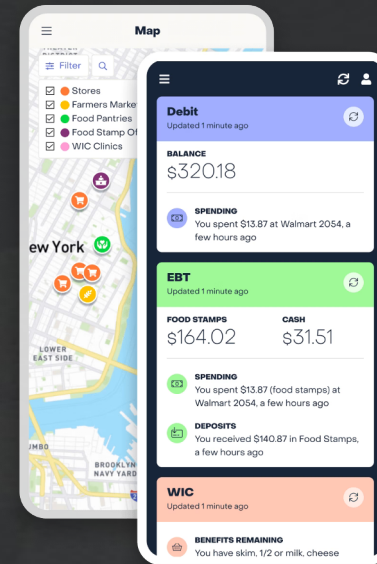
Comeback
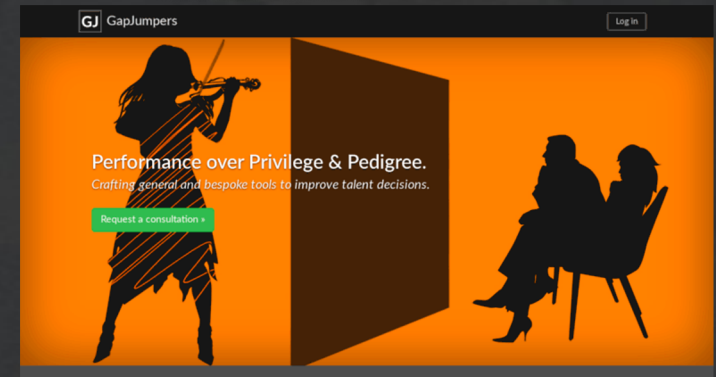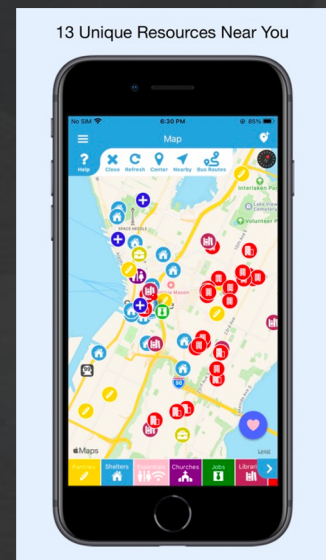
GapJumpers

Pablo Ocampo

he/him

- CS Coterm (HCI); CS Undergrad (AI), Music Minor
- Interested in product management and sustainable design
- I love travelling 🚀 and learning foreign languages and culture! Also, big classical music nerd 🎻 and gamer 👾
- Office Hours: Thurs 11 AM -12 PM, Tues - by appointment (https://calendly.com/pablo-ocampo/cs147-oh)

The Future of Philanthropy & Volunteering

With a growing population of millennial and Gen Z adults as well as the dawn of the centibillionaire, we're seeing signs of a changing philanthropy and volunteering landscape. Organic and creative new methods of donorship, such as bingo donation games on Instagram Stories, display how times are changing and there's room for innovation. How might we reinvent philanthropy in the 21st century?

Examples: GoFundMe, ShareTheMeal, Charity Miles, Coin Up

Studios: Friday 11 AM – 1 PM, 1:30 - 3:30 PM

GoFundMe
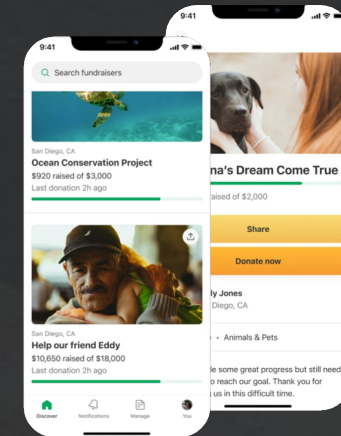
ShareTheMeal
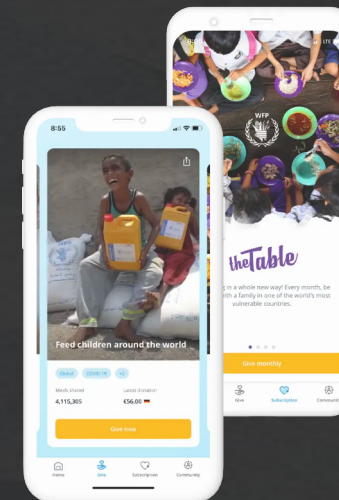
Charity Miles
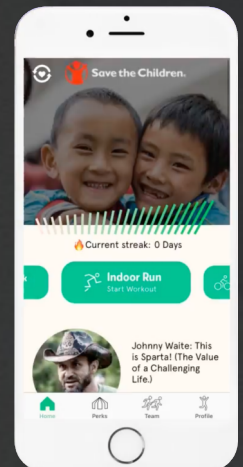
Katherine Gjertsen

she/her

- CS Coterm (HCI); Symsys Undergrad (HCAI)
- Interested in product management, behavior science, and VR
- I love playing games and sports, coffee shops, and meeting new people
- Office Hours: Tues / Thurs - by appointment (https://calendly.com/kgjert/147-oh)

Simplify Your Life: Inspiring Productivity & Efficiency

Technology continues to play an integral role in our daily lives. Some important practical and productive features can be muddled by the constant stream of extraneous information and distractions. As we step away from our phones, we are still bombarded with high amounts of sensory information, busy schedules, and endless to-dos to check off our lists.

Amidst all of the chaos, it is important to find ways to offload the high volume of information. How might we avoid the feeling of fatigue and instead explore technology that inspires focus, personal growth, and efficiency? In this studio, we will be exploring topics in behavior change and productivity to create supportive technology that operates as a personal assistant or life coach.

Studio: Friday 9:45 - 11:45 AM

Focusmate

Nike Run Club
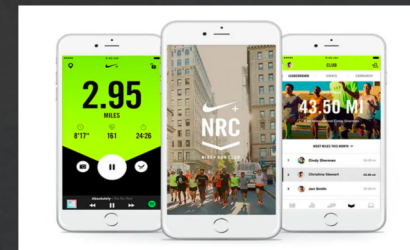
Fabulous
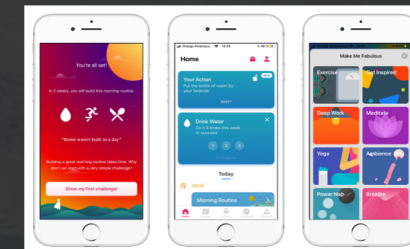
Some Norms for Lecture

- COVID
  - Be **flexible** with us & each other. It is a tough time for everyone right now & more so for some. Let's respect that!
  - Hopefully we will be in person soon, but if not, we will roll with it!

- Video
  - have it on if you are able to as much as possible (we understand sometimes it isn't)

- Participate
  - harder than in person in some ways & in some ways easier
  - slack will be primary (cs147-2022wi) – you should have been invited
  - some voting with Zoom feedback & polleverywhere, but mainly slack

What Do You Hope to Learn in CS147?

Put a few key phrases in the #lecture slack channel

* if you aren't in our cs147 slack grid, direct message Ji (jiannaso@stanford.edu)

** For all **during** lecture activities & questions use the #lecture slack channel so we can see them. For questions outside of lecture time, use the #q-and-a channel.

BREAK
10 min
stretch, eat, etc.

Design Thinking for User Experience Design, Prototyping & Evaluation

Outline

- *Who are we?*
- AI & User experience design
- Balancing design thinking & technology
- Design discovery & exploring ideas
- Rapid prototyping & evaluation
- Goals of the course
- Course format & schedule
- Course policies

AI Needs User Experience (UX) Design

- Tesla Model S "Autopilot"
- Future of autonomous cars
- How do we design the UX?

AI Needs User Experience (UX) Design

- Amazon Echo, Google Home & other Smart Speakers use Voice UI
- How do we design them to deal with natural human conversation?
- How do we design to support multimodal input? (e.g., + screen or vision)

AI Needs User Experience (UX) Design
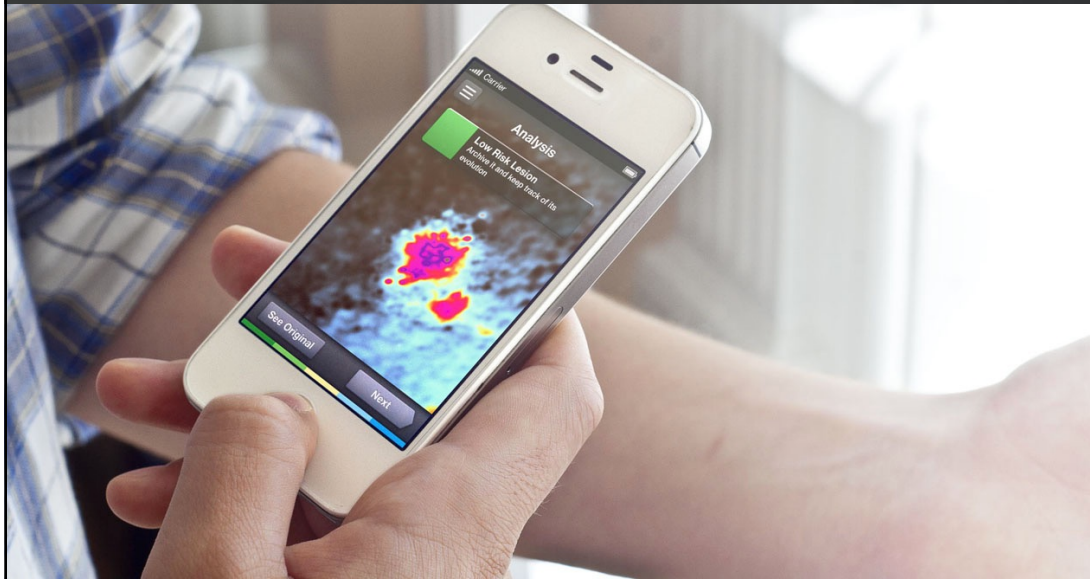
Computer vision-based skin cancer detection getting better and better

- What is appropriate to show a patient?
- What should be the interface for the doctor?
- Is there a set of design patterns for these Smart UIs?

Balance

DESIGN   TECHNOLOGY

Approach to Application Design & Prototyping
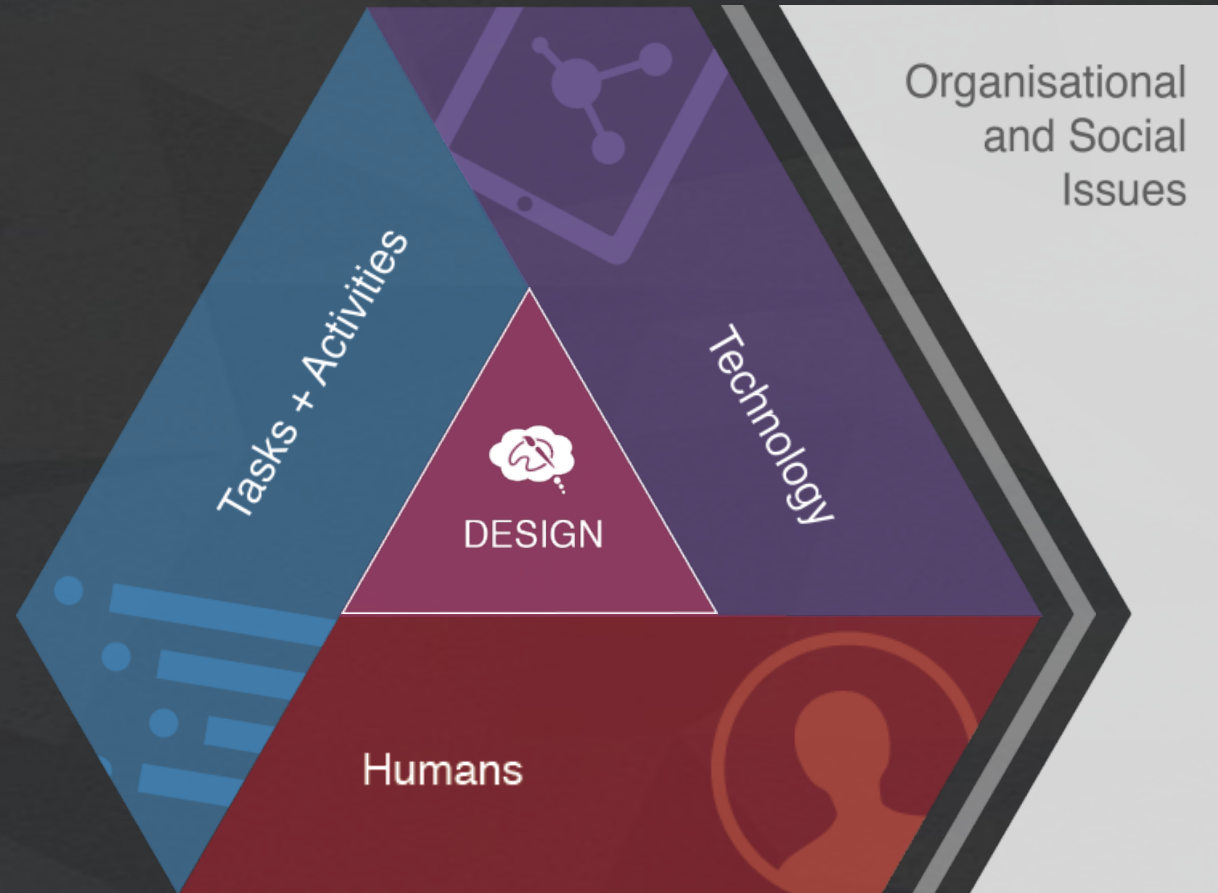
Design Thinking Process
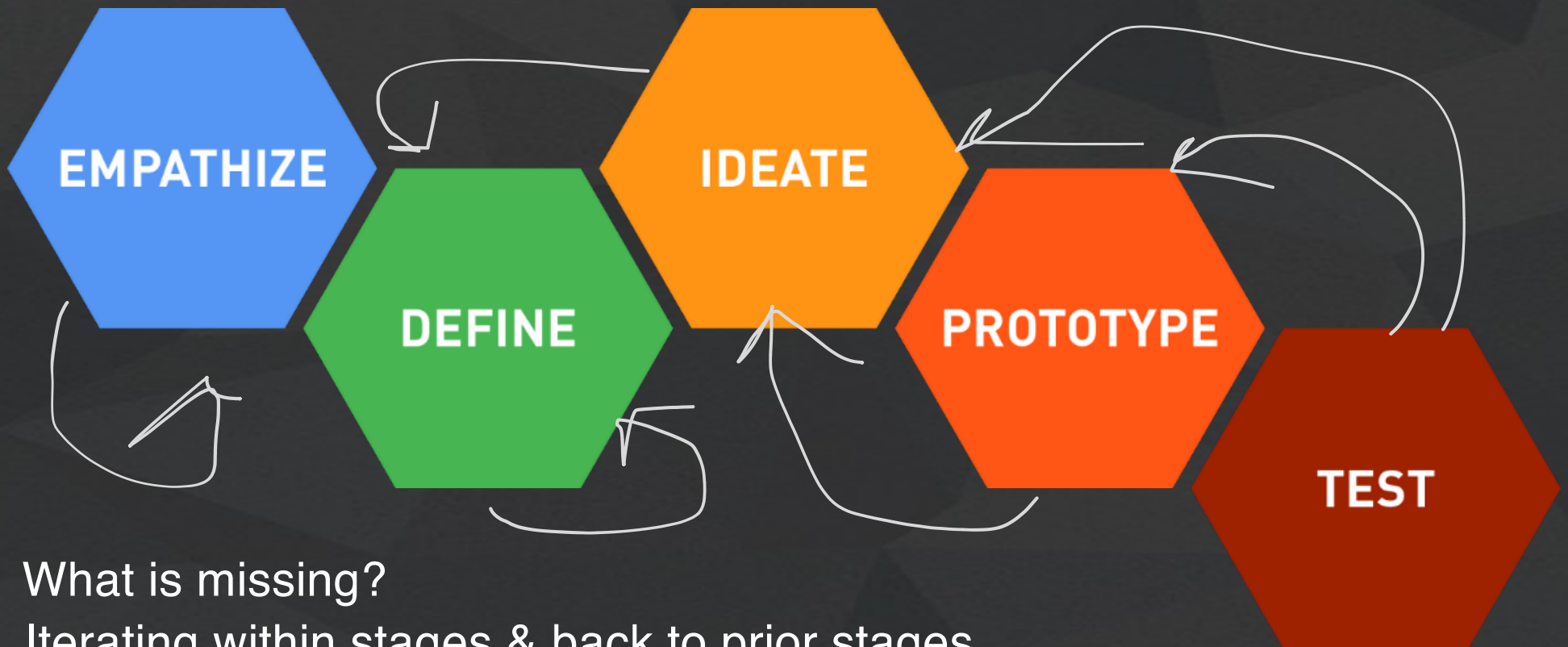
What is missing?
Iterating within stages & back to prior stages

How to Design and Build Good UIs

- Iterative development process
- Usability goals
- User-centered design
- Design discovery
- Rapid prototyping
- Evaluation
- *Programming*

Iteration

At every stage!

Design

Prototype

Evaluate
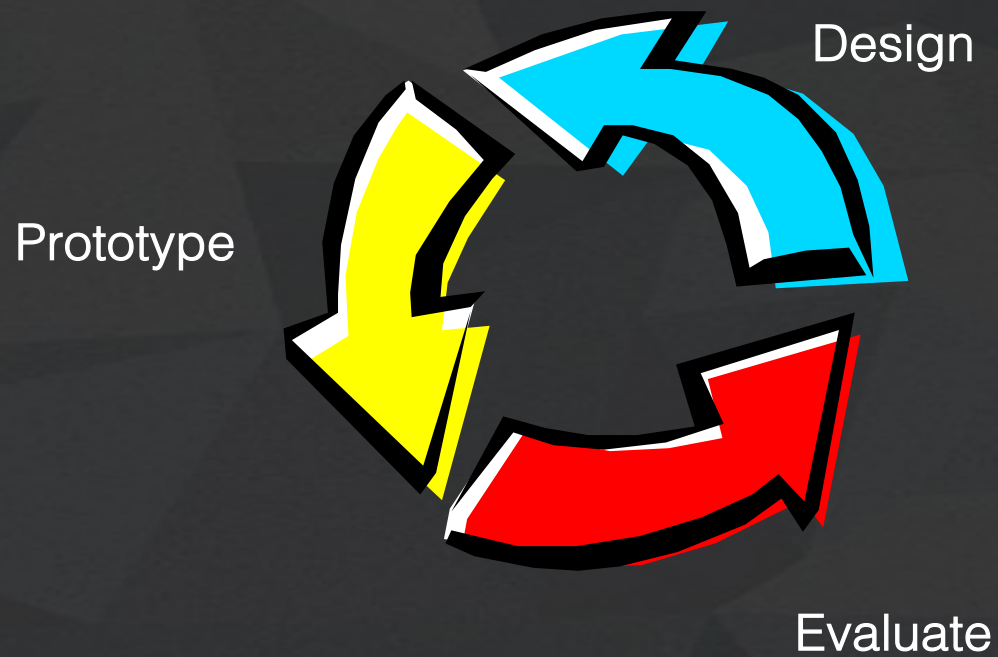
Usability(?)

According to the ISO:

> The *effectiveness*, *efficiency*, and *satisfaction* with which specified users achieve specified *goals* in particular *environments*.

This doesn't mean you have to create a "dry" design

Usability/User Experience Goals

- Set goals early & later use to measure progress
- Goals often have tradeoffs, so prioritize

- Example goals(?)

  - Learnable
    - faster the 2nd time & so on
  - Memorable
    - from session to session
  - Flexible
    - multiple ways to do tasks
  - Efficient
    - perform tasks quickly

  - Robust
    - minimal error rates
    - good feedback so user can recover
  - Discoverable
    - learn new features over time
  - Pleasing
    - high user satisfaction
  - Fun

User-centered Design

"Know thy User"

- Cognitive abilities
  - perception
  - physical manipulation
  - memory

- Organizational / educational job abilities

- Keep users involved throughout
  - developers working with target customers
  - think of the world in users' terms

Accessible Design

- Different abilities
  - vision, hearing, cognitive, mobility
  - e.g., blind users with screen readers

- Moral and ethical purpose
  - inclusive design benefits everyone
  - e.g., sidewalk curb cuts

- Legal guidance
  - Americans with Disabilities Act (ADA)

https://www.appspringtech.com/wp-content/uploads/2020/09/descarga.jpg
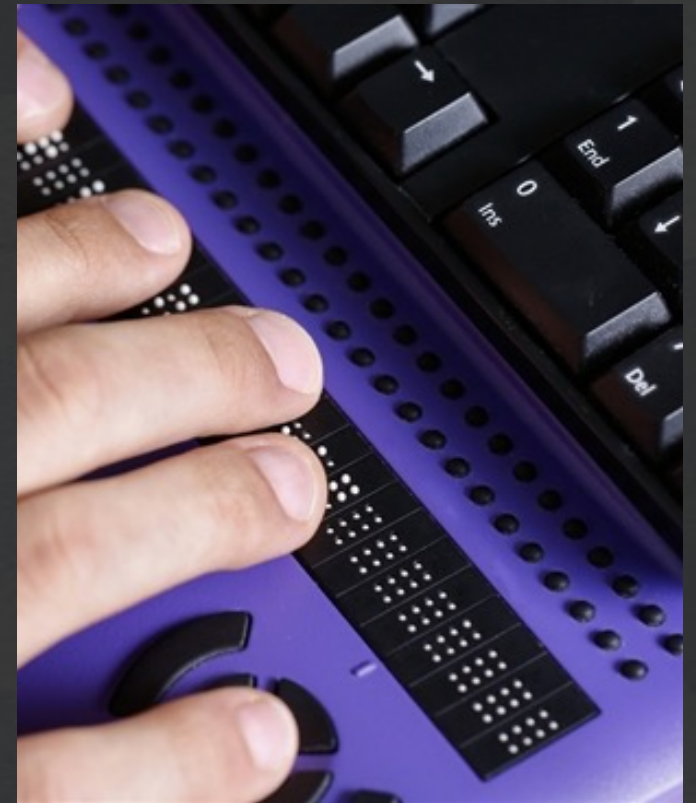
User-centered Design: Needfinding

- Observe existing practices for inspiration
- Make sure key questions answered
- Ethical questions in design w/ underserved communities

Thread

Unpacking the Needfinding

Develop Point of Views
(Person + Insight + Challenge)
Brainstorm on How Might We Solve

Sketching & Storyboarding

artbot

Concept Videos

- Illustrate context of use rather than specific UI

- Quick & inexpensive
- Forces designers to consider details of how users will react to the design

Concept Videos: Planning Storyboards

Concept Videos: Planning Storyboards

SmartSenior

Off

Rapid Prototyping

Fantasy Basketball
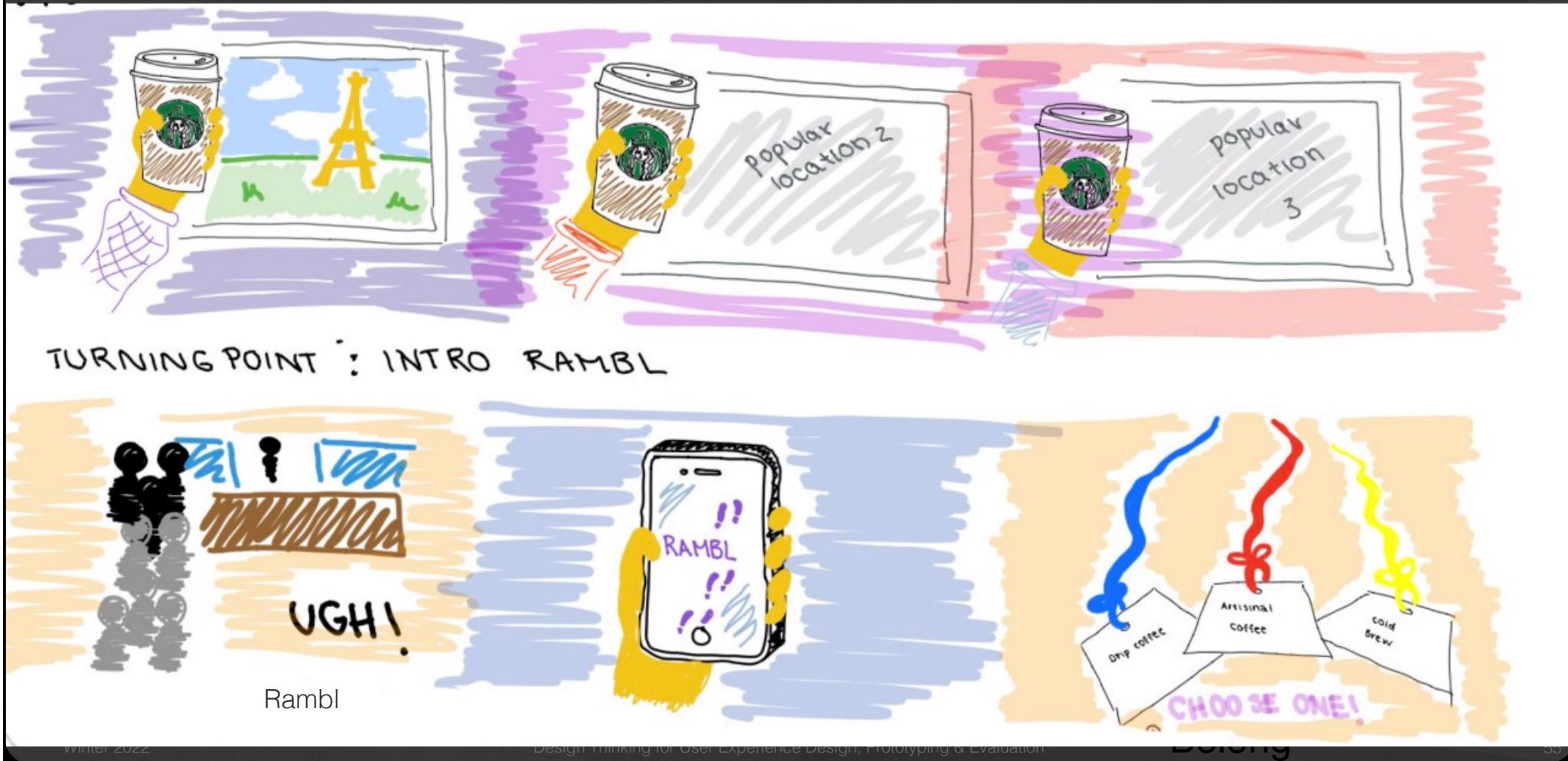
- Build a mock-up of design so you can test it

- Low fidelity techniques
  - paper sketches
  - cut, copy, paste

- Interactive prototyping tools
  - HTML, Balsamiq, Axure, proto.io, Sketch+Marvel, Modao, etc.

- UI builders
  - Expression Blend + Visual Studio, Xcode Interface Builder, etc.
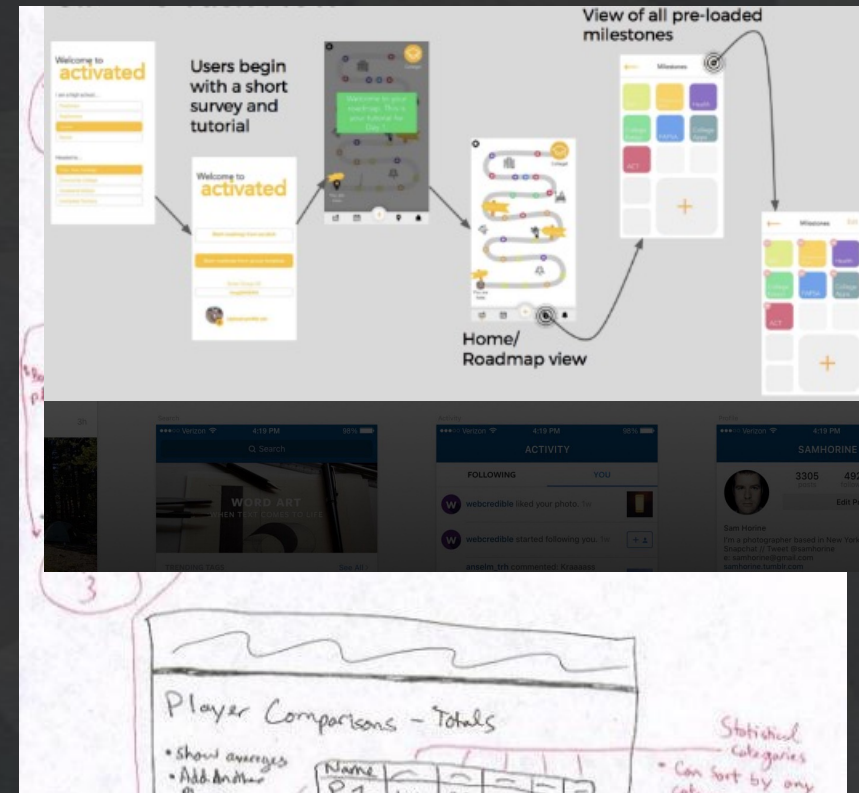
Low-fi Prototyping & Testing
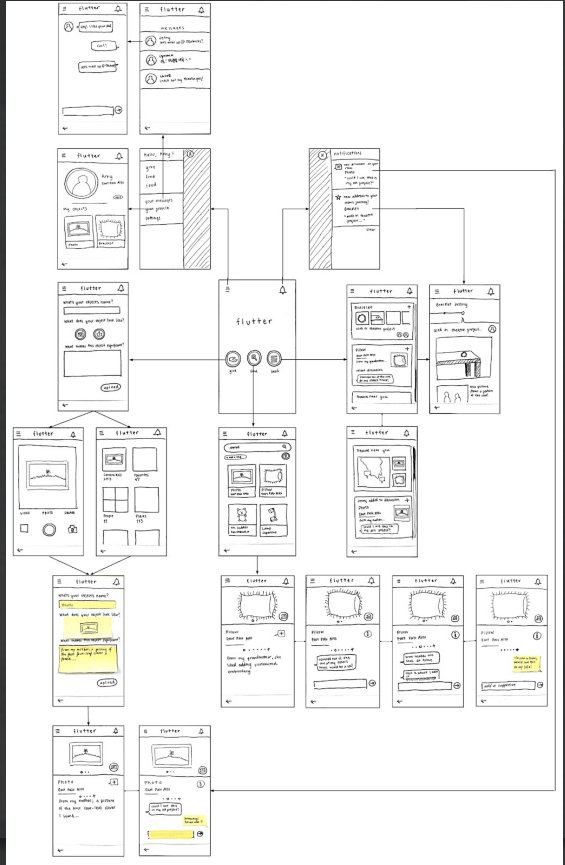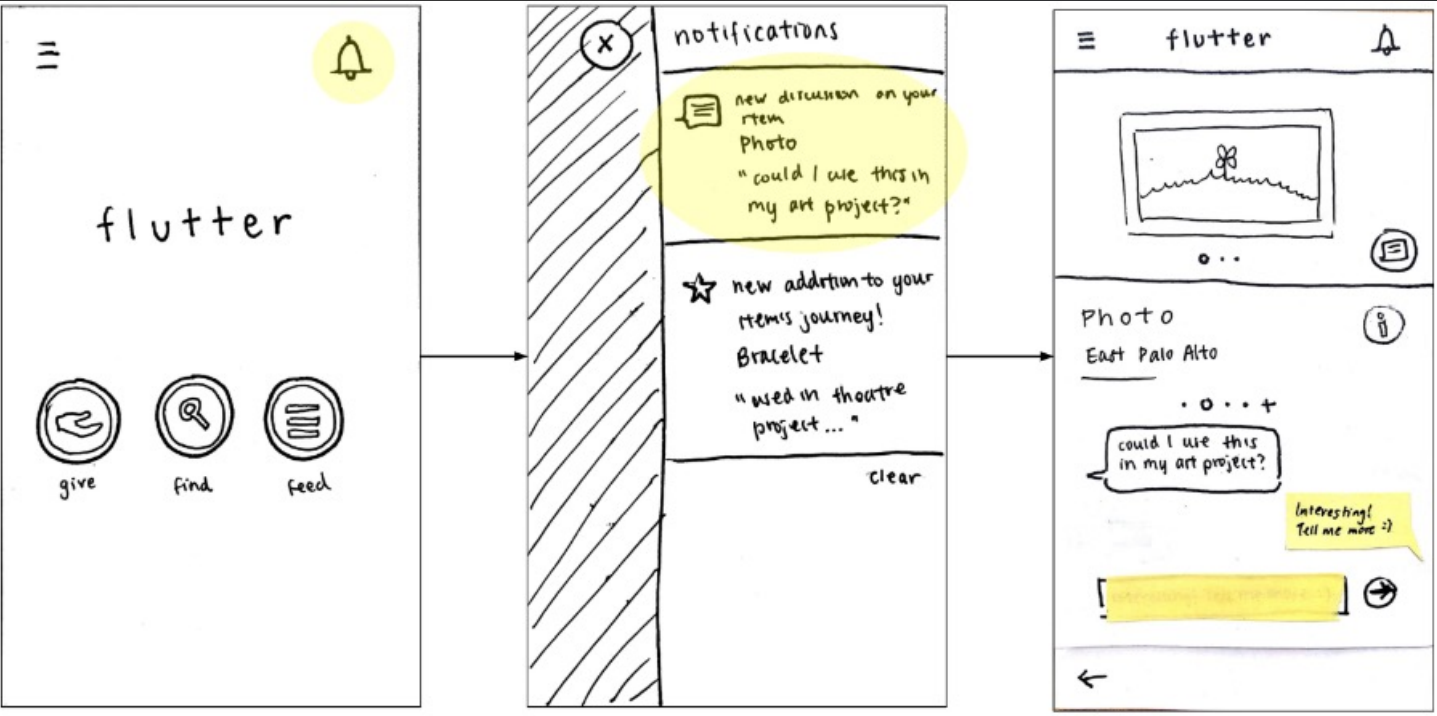
Flutter

Low-fi Prototyping & Testing
→ *Final Hi-Fi Prototype*

Flutter

Low-fi Prototyping & Testing

Vibes

Interactive Prototypes
Medium Fidelity

deatz

Task #2: Groups

Unable to change group settings (i.e. restrictions, leave group)
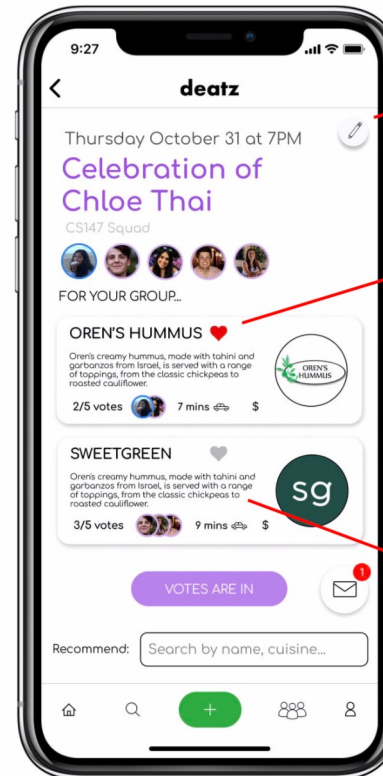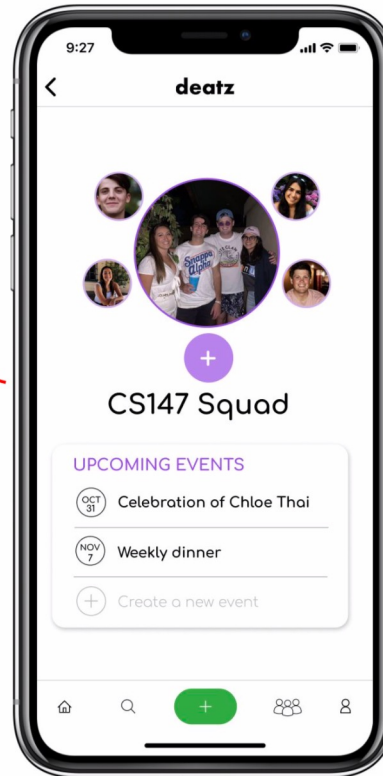
Cannot **update attendance status**

Voting abilities unclear and not emphasized

Restaurant descriptions **distracting and not important**

Interactive Prototypes
Hi-Fidelity

off
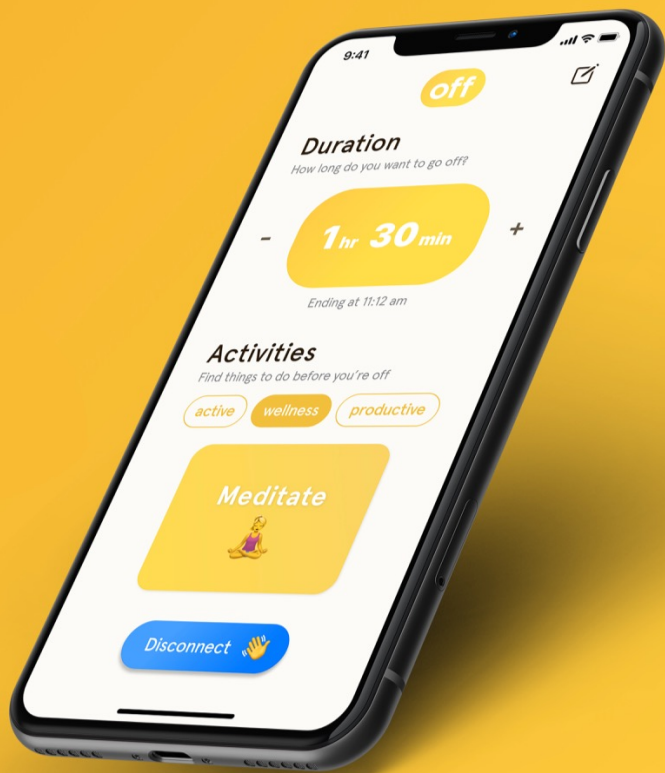
butter
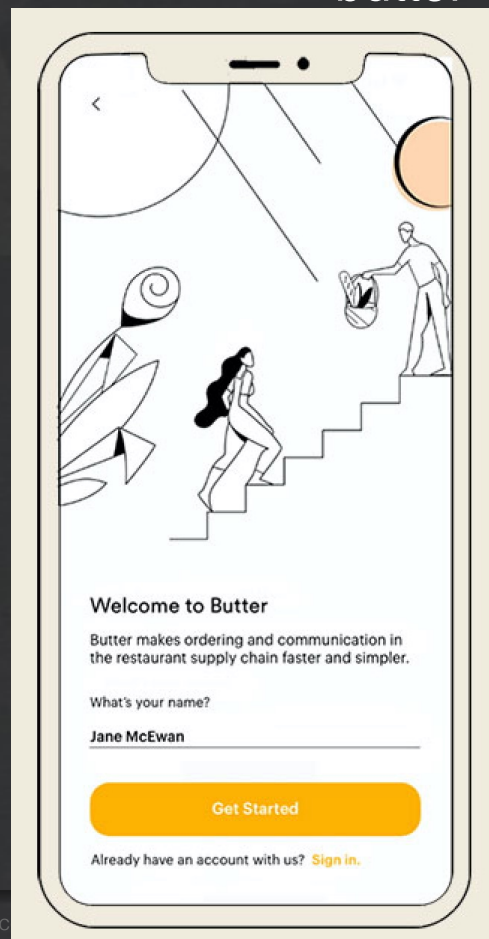
thread
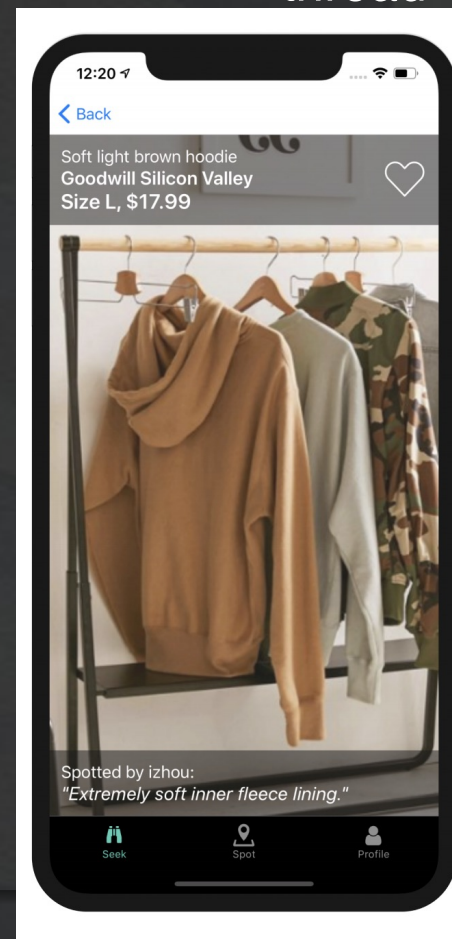
Interactive Prototypes
Hi-Fidelity

- Does this mean at the quality to go in an app store?
  - for a few yes, but for most no (this is not a requirement & many will push to this in CS194H)
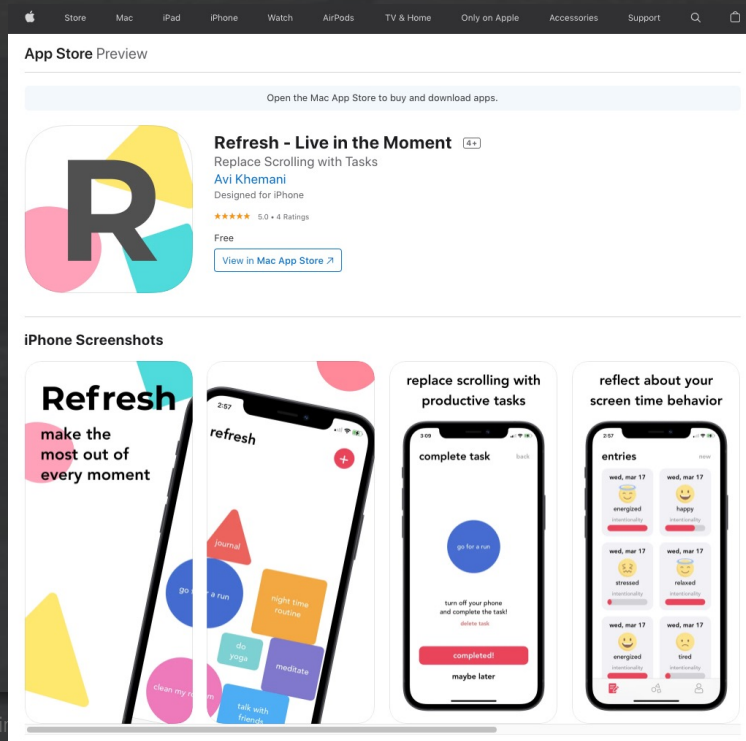
- You will be building a real app (with code)
  - not a click-thru prototype (e.g., using Figma or InVision)
- It should support most of your functionality

- But it might be missing
  - polish
  - back-end implementation
    - maybe data stored locally, social networks incomplete, etc.

- CS (intended) majors should have pre-reqs (106B/X, 142/193P/193A or experience building apps) If not…

CS47 – Cross-Platform Mobile Development

- Create a mobile app on both iOS & Android using the React Native framework in just 10 weeks
- Tuesday/Thursday 11:30 AM – 1 PM, 2 Units C/NC
- You can dual use CS47/CS147 projects!

- Join Tuesday's lecture for a course & application overview
  - tinyurl.com/cs47-zoom-wi2022

- Apply here by 1/7 6 PM
  - tinyurl.com/cs47-application-wi2022

Evaluation

- Test with real customers (participants)
  - w/ interactive prototype
  - low-fi with paper "computer"

- Low-cost techniques
  - expert evaluation (Heuristic Evaluation)
  - online testing
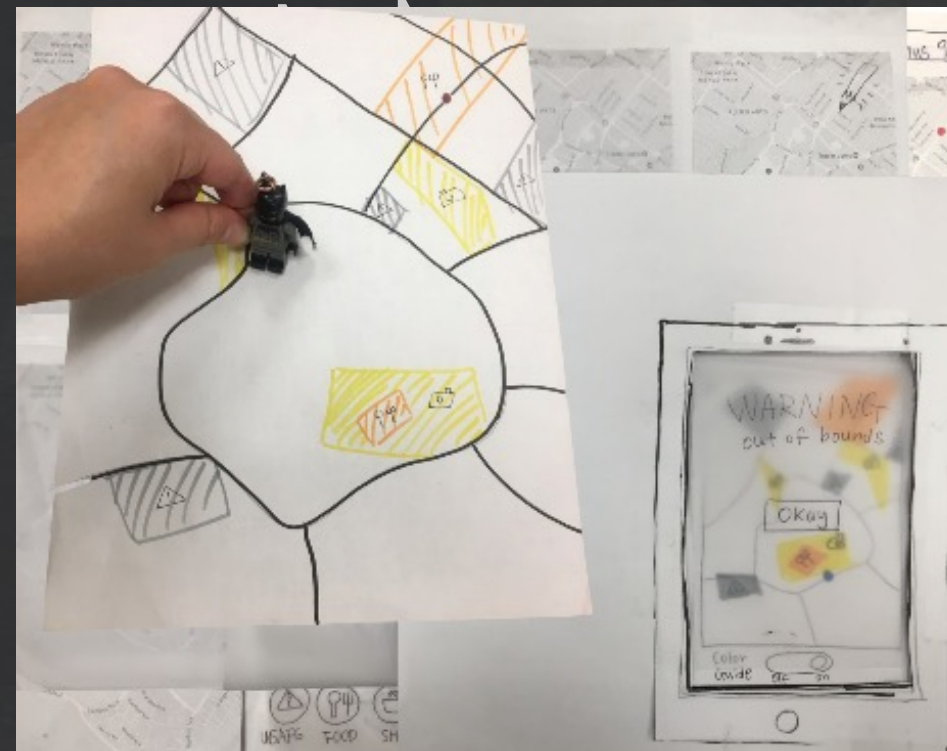
Wanderlust

Goal of CS 147
Learn to design, prototype, & evaluate UIs

- Tasks, activities & practices of prospective users
- Cognitive/perceptual constraints affecting design
- Techniques for brainstorming, ideation & prototyping
- Methods for evaluating UI designs
- Importance of iterative design for usability
- Technology used to prototype UIs

- *How to work together as a team*
- *Communicating results to a group*

Course Format

- Interactive lectures → you speak!

- Each week
  - 2 lectures on techniques & background
    - 60-80 minutes of lecture
    - 20-30 minutes team meeting each lecture → you need to be here to work with your team
      - some limited exceptions for some teams that are many time zones away
    - 10-20 minutes for in class exercises
  - 1 studio with hands-on activity or team presentation

- Quarter-long project

- Readings, Videos, Podcasts

- Course material will be online
  - slides, exercises, readings, schedule
  - ~~no~~ lecture video (this will depend on Stanford COVID policies)

- Have fun & participate!

Projects

- Each team will propose a UI-oriented project
  - fixing something broken or a completely new idea
  - based on team *needfinding*

- Theme
  - each Thursday/Friday studio has a theme
  - all projects mobile/wearable/off desktop

- Groups
  - 3-4 students to a group (4 preferred)
  - work with students w/ *different skills*
  - CS students should have had 142/193p/193a or equivalent (non-majors need not)
    - If not, take CS47 (Tu/Th11:30 AM – 1 PM)
      learn ReactNative, dual use project for CS47/147
  - groups meet in class & studio weekly

- Cumulative
  - apply several HCI methods to one interface

- If you let your team down, we will lower your grade

Design Studios

Teams attend small weekly studio (9-16 students)
- critique/feedback in more intimate environment

Design Thinking for User Experience Design, Prototyping & Evaluation

Project Process Timeline

Midterm

Concept
Video

Medium-fi
Prototype

High-fi
Prototype

Needfinding

Experience
Prototypes &
Testing

Low-fi
Prototype

Heuristic
Evaluation

Project Fair

Week 2   Week 3   Week 4   Week 5   Week 6   Week 7   Week 8   ...   Week 10

CS 147 COURSE TIMELINE

	SUN	MON	TUE	WED	THU	FRI	SAT	
WEEK 1	2	3 Intro	4	5 Design Discovery	6	7 Project 0	8	

Filling out studio preference form, due in class 1/5
Assignment 1 (Needfinding) released, due in studio 1/13 or 1/14

Legend:
- Lecture (gray)
- Studio (for most people) (pink)
- Special Event (magenta)

	SUN	MON	TUE	WED	THU	FRI	SAT	
WEEK 2	9	10 Define	11	12 Ideate	13	14 A1 Presentation, POVs	15	

Assignment 2 (Define) released, due in studio 1/20 or 1/21
Working on Assignment 1 (Needfinding), presented in studio 1/13 or 1/14

	SUN	MON	TUE	WED	THU	FRI	SAT	
WEEK 3	16	17 MLK Jr. Holiday	18	19 Concept Videos	20	21 A2 Presentation, Tasks	22	*Accessibility workshop sometime this week.

Assignment 4 (Video) released, due in studio 1/27 or 1/28
Assignment 3 (Website) released, final due 3/2 @ 11:59 PM
Working on Assignment 2 (Define), presented in studio 1/20 or 1/21

	SUN	MON	TUE	WED	THU	FRI	SAT	
WEEK 4	23	24 Exploration	25	26 Early Stage Prototyping	27	28 Concept Video Crit, Sketching	29	*Visual design workshop 1 (Figma skills) this week.

Assignment 5 (Low-fi & Test) released, due in studio 2/3 or 2/4
Working on Assignment 4 (Video), presented in studio for critique 1/27 or 1/28   A4 Video Revisions (optional)

	SUN	MON	TUE	WED	THU	FRI	SAT	
WEEK 5	30	31 Film Festival!	1	2 Visual Info Design	3	4 A5 Presentation, Design Systems	5	*Visual design workshop 2 (Design Systems) this week.

Working on Assignment 5 (Low-fi & Test), presented in studio 2/3 or 2/4
A4 Video Revisions
Assignment 6 (Med-fi) released, due Monday 2/14 @ 5 PM

ASSIGNMENTS OVERVIEW

See corresponding colors on the calendar to see when these projects will occur during the quarter.

Assignment 1

Needfinding

In this assignment you will plan, develop, and execute the first needfinding round for your quarter-long team project. You will present your interview plan (methodology), data gathered from your initial interviews, and the key insights and inferences you have made. You will capture this analysis in an empathy map that you will share in your studio presentation.

Assignment 2

POVs and Experience Prototypes

You will revisit the findings from A1, interview more participants based on a deeper focus, and formulate points of view for your potential users. From there, you will craft several "How Might We" statements to frame the problem area and intended design goal. Based on the best HMW statements, you will brainstorm several solutions. You will then create and test 3 "experience prototypes" to learn more about these ideas.

Assignment 3

Website

The goal of this assignment is to learn how to present your work in a professional, engaging, and appealing manner. Previous students have used their websites to talk about their project when on the job hunt! Your website will be hosted on Stanford AFS.

Assignment 6

Interactive Medium-fi Prototype

Learn how to build medium-fidelity, interactive prototypes of UI ideas using an interactive UI design tool. Understand the tradeoffs compared to low-fi prototyping or even creating a prototype through coding. You will revise your UI ideas based on the insights from your low-fi prototype user testing and feedback from your studio peers and CA. Then, you will use interactive tools to

Assignment 4

Concept Video

The goal of this assignment is to continue to learn how to brainstorm novel design ideas and turn these ideas into a concept video. You will start by conducting market research to find other apps in your space (ensure you're thinking up a novel product). You will then shoot a video that will

Assignment 5

Low-fi Prototype and Usability Test

Learn how to use low-fi prototyping in the early stages of UI design. You will first sketch many different design realizations

Books

We will give you web links to all necessary readings/videos

Recommended textbook (if you need one)
Designing the User Interface: Strategies for Effective Human-Computer Interaction by Shneiderman et. al, 6th edition (2016)

Assignments

- Individual
  - 1 presentation each
  - 1-2 written (handed in online)
  - class & studio participation (graded)
    - in class exit tickets to show you came to lecture & are paying attention

- Group
  - 10 assignments
    - 4-5 presentations with 3-4 write-ups + video + poster
  - all group work handed in online
    - team web site & online submission site

Grading

- A combination of
  - individual assignments & presentation (10%)
  - class/studio participation (10%)
  - midterm (20%)
  - group project (60%)
    - presentations/poster (group component)
    - project write-ups

- No final
  - **must be present at project fair** on Fri., 3/11 instead

Tidbits

- Late Policy
  - no lates on group assignments
  - individual assignments lose one letter grade/day

- Course web site
  - http://hci.stanford.edu/courses/cs147/2022/wi/ or cs147.stanford.edu

- Studio preferences & team signups (you do *not* need a team in advance!)
  - https://bit.ly/cs147-22wi-studio
  - due Wed at 5 PM

- Attendance
  - you are expected to be in lecture & studio synchronously (and eventually in person)
  - If you have a small conflict (less than 30 min), we will consider how to resolve it
    - fill out https://bit.ly/cs147-conflicts for us to review & approve conflicts
  - we drop 1 studio miss, after that it comes out of your participation grade
  - if you get sick, we will figure it out. Contact me & our head CA (Kristina)

Summary

- UX design is an important part of most software

- Getting the interface right is hard, but…

- Solution is *Iterative Design* including repeated cycles of
  - Design
  - Prototyping
  - Evaluation

Next Time

- Design Discovery

- Read
  - Margaret Gould Stewart, From tecnho-optimism to techno-realism: What it means to innovate responsibly
  - Adams, 4 Steps to Successful Brainstorming, Forbes, 2013
  - Holtzblatt & Beyer, Ch. 3 from *Contextual Design*
  - d.school's Empathy Fieldguide
  - optional: Holtzblatt & Beyer, Contextual Design, In *The Encyclopedia of Human Computer Interaction*, 2nd Ed.
  - If any readings are password protected, it should be "hcid"

- Watch
  - ABC News Nightline IDEO Deep Dive, July 1999 (22 minutes)
  - optional: ABC News, IDEO Design Thinking, January 2013 (13 minutes)