CSE 440:
Introduction to HCI

01: Introduction to HCI

March 26, 2024

Jesse J. Martinez | Avery Mack | Simona Liao

Surprise! Door Quiz

Say out loud what action you use to open the door:

PUSH

PULL

Door Quiz 1

Door Quiz 2

Door Quiz 3

Door Quiz 4

Door Quiz 5

Door Quiz 6


THIS DOOR IS
LOCKED AFTER
5:00PM
HUB
UNIVERSITY of
WASHINGTON
AUTOMATIC
CAUTION
DOOR

Door Quiz 7


PUSH
You can HAVE IT YOUR WAY and pull if you want, but this hinge is pretty stubborn.
AMERICAN EXPRESS
Pull
BURGER KING

Door Quiz 8

Door Quiz 9


SATURDAY
12PM - 9PM
SUNDAY
12PM - 8PM
SIZZLE & CRUNCH
HERE
PULL
PULL

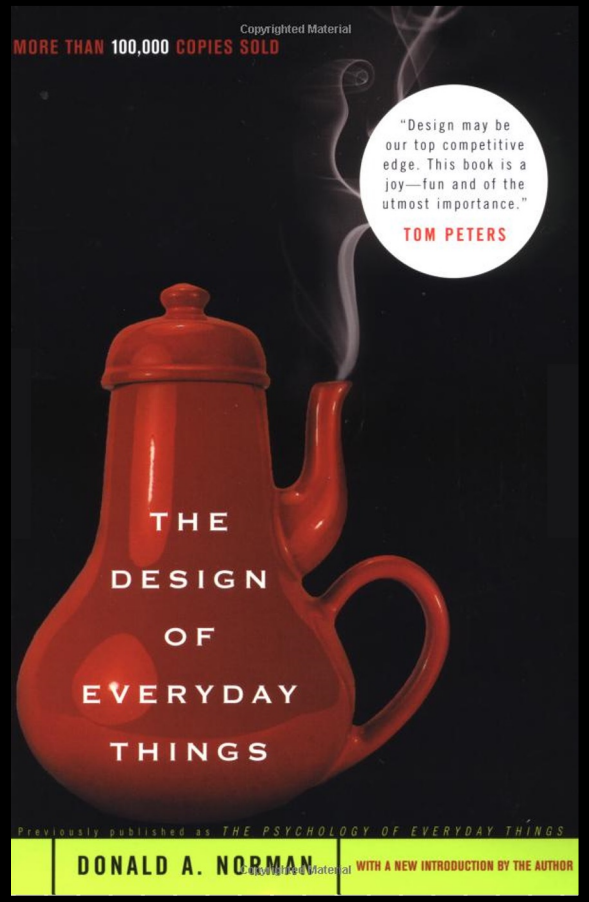
Door Quiz 10

What's so Special About Computers? 1

Nothing!

Computers can still have Good Designs and Bad Designs

- We make push/pull decisions every day
- We all encounter doors that do this badly
- Additional Instructions don't solve the problem



Signs Do Not Help [1]

Signs Do Not Help 2

Signs Do Not Help 3

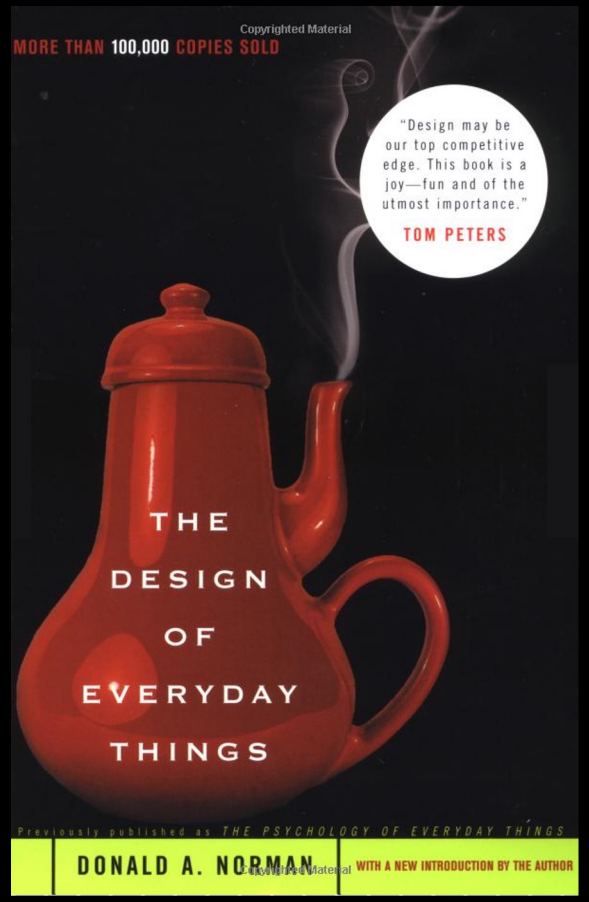
Signs Do Not Help [4]

What's so Special About Computers? 2

Things are poorly designed,
yet we often blame ourselves / "the user"

Absolutely everything we
encounter in the world
was designed

Pointing out bad design is
NOT a lazy excuse!



Iterative Human-Centered Design

This class is about **process**

This is not a course about “good” interfaces,
or even about computers (sometimes!)

Rapid iteration & exploration is
the most important & effective tool for design

Project Overview

The core of this course is a group project

Propose and do an intense end-to-end design

- Getting the Right Design
- Getting the Design Right
- Communicating the Design

NOT an implementation course

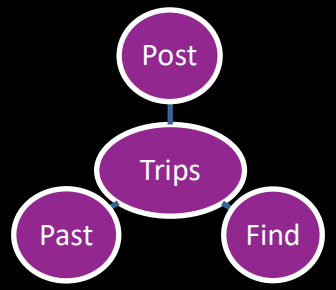
Design Research & Task Analysis

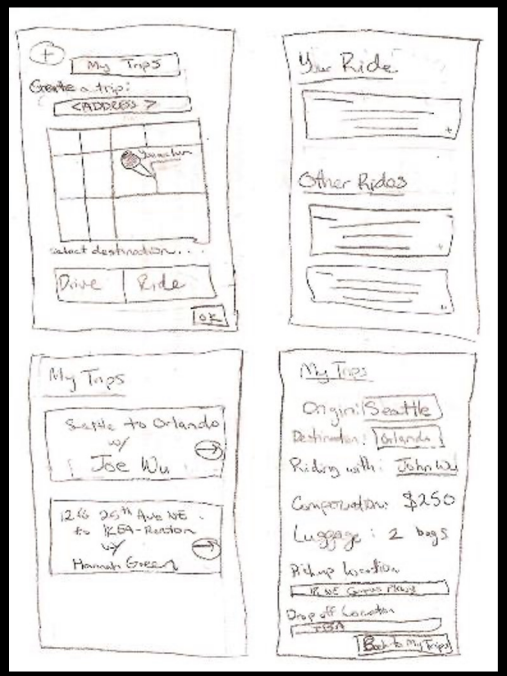
Observe practices and understand needs

Consumester

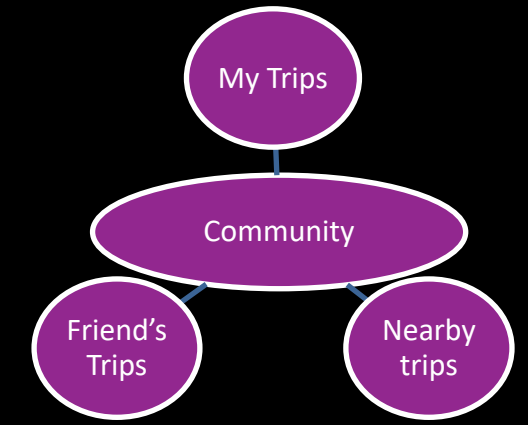
FoodWatch

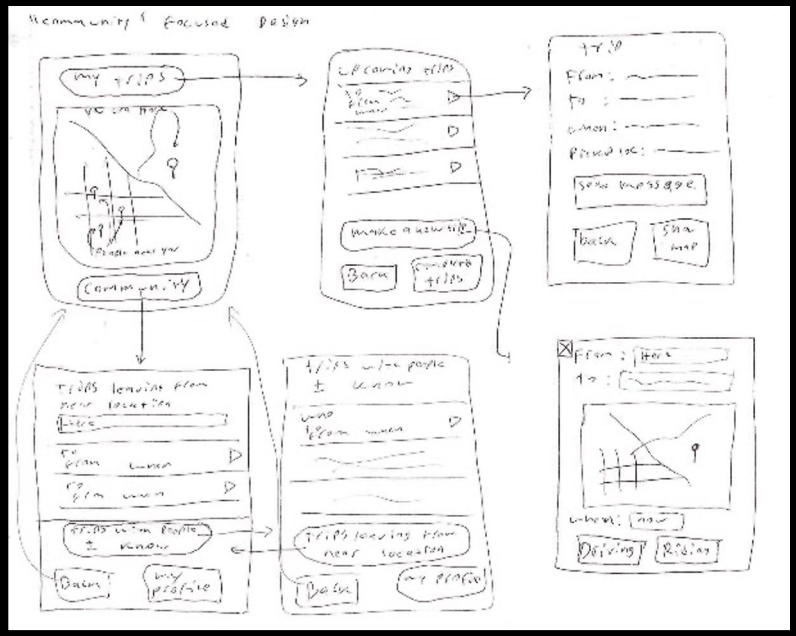
Sketching & Storyboarding 1



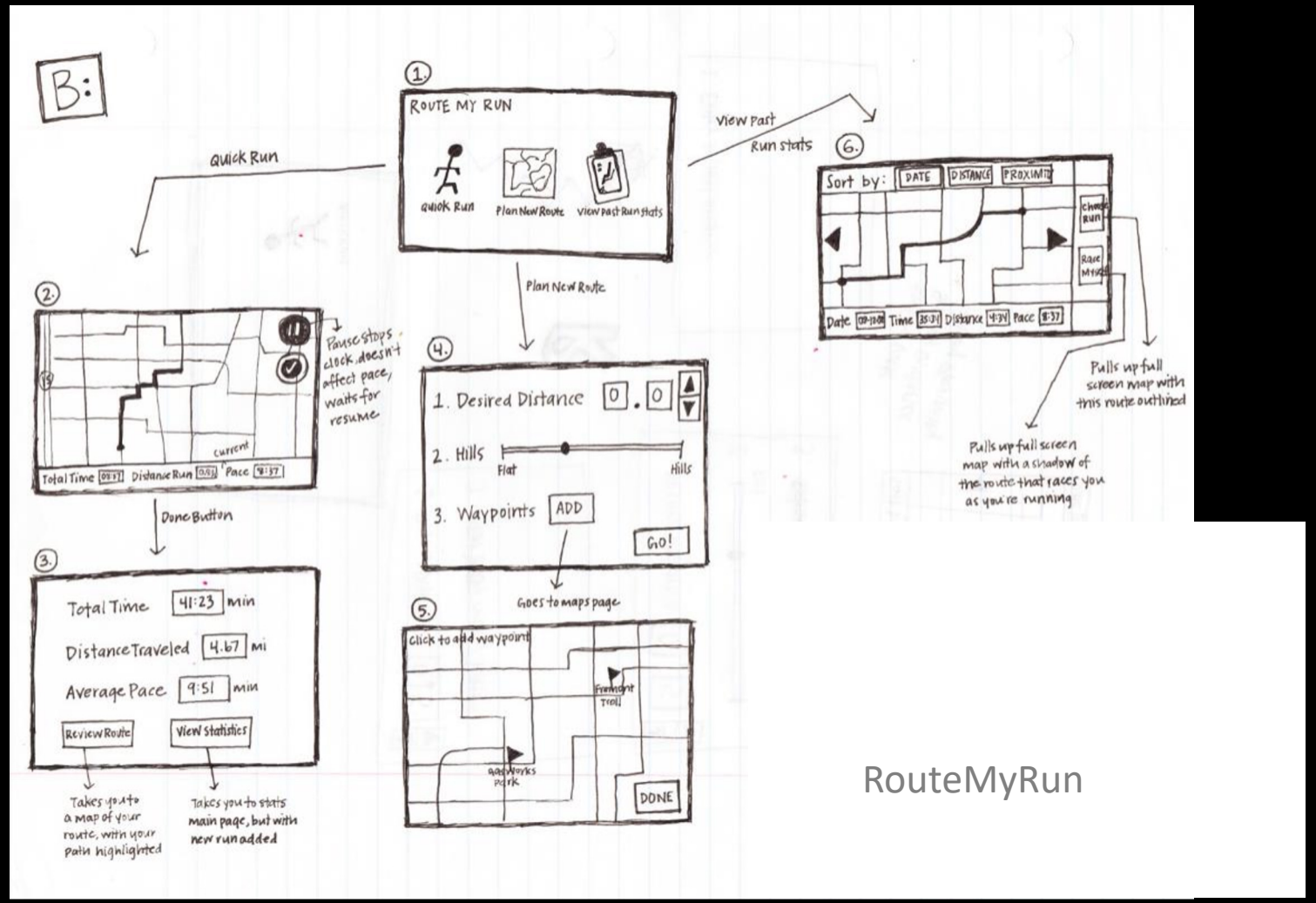


RideAlong



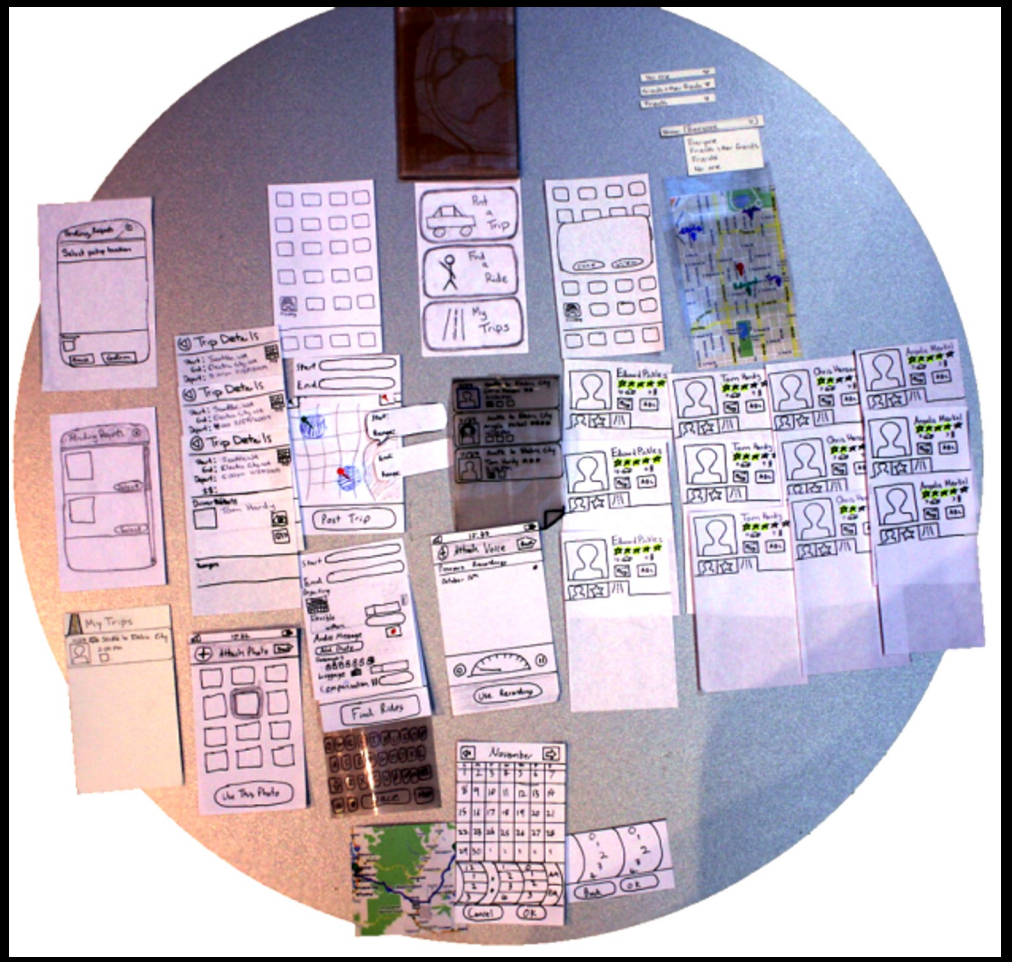


Sketching & Storyboarding 2



RouteMyRun

Low-Fidelity Prototyping & Testing



RideAlong

Digital Mockup

Balance

.calm

Studio Time in Section and Lecture

This course is designed around rapid feedback

Section is primarily studio time with the staff

- Groups will be formed within section
- Your team always brings a milestone to studio
- Participation is a critical component of the course

Tuesday / Thursday milestones and activities

- Your team basically always has a milestone due
- Class may include activities or project time

Overview

HCI and the Project Sequence

Course Staff Introductions

Administrivia

Assignment 0

Assignment 1: Project Proposal

- Assignment 1a: Due Thursday
- Assignment 1b: With Groups, Due Wednesday

Some Reflection

Project Theme Reveal!! & Some Relevant Background

Who We Are

Jesse Martinez

Prefer: Jesse / He / They

Education

BS in Computer Science @ Uchicago
MS in CSE @ UW
Soon: PhD in CSE @ UW

Other Lives

Computational Artist
Professional Game & Puzzle Designer
Game Accessibility Consultant

Interests

Jack of all Crafts; Board & Video Gaming; Hacking; Spoiling my Cats

Who We Are

Research

Current:

- Game Accessibility
- Access Hacking
- Applying Game Design in other HCI Domains

Past Lives:

- “All-purpose HCI”
- Usable Security
- Transmedia Game Design

Who We Are

Simona Liao

Prefer: Simona / She / They

Background

Computer Sci & Gender, Women, Sexuality Studies during undergrad

BS/MS student now!

Research Experience

HCI, Social Futures Lab w/ Prof. Amy Zhang

Safety Design in Social VR Games

Interests

Movies, Games, Anime, Food, Plants

Super Nintendo World!!

Who We Are

(Kelly) Avery Mack

Prefer: Avery / They / Them

Background

Computer Sci at UIUC (go corn!)

Research Experience

Accessibility w/ Dr. Jen Mankoff, defending my thesis April 29!

Interests

Graduating, dancing, anime (Simona we should talk 👀), my cat, games

Your Turn

Find somebody you do not already know

Take 1 minute each
to introduce yourselves

- Name, year, major
- Favorite hobbies
  or interesting fact
- Goal for this class

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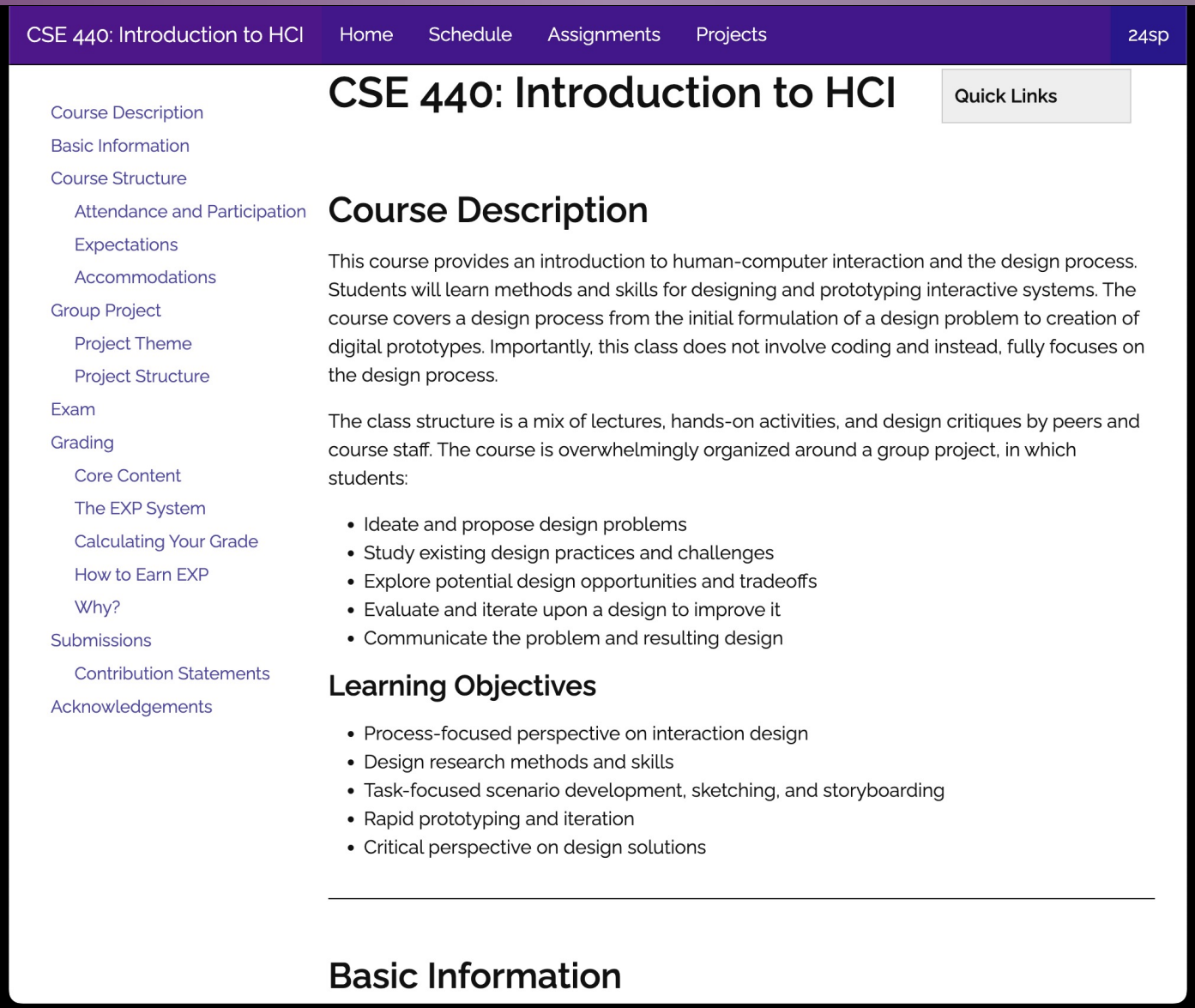
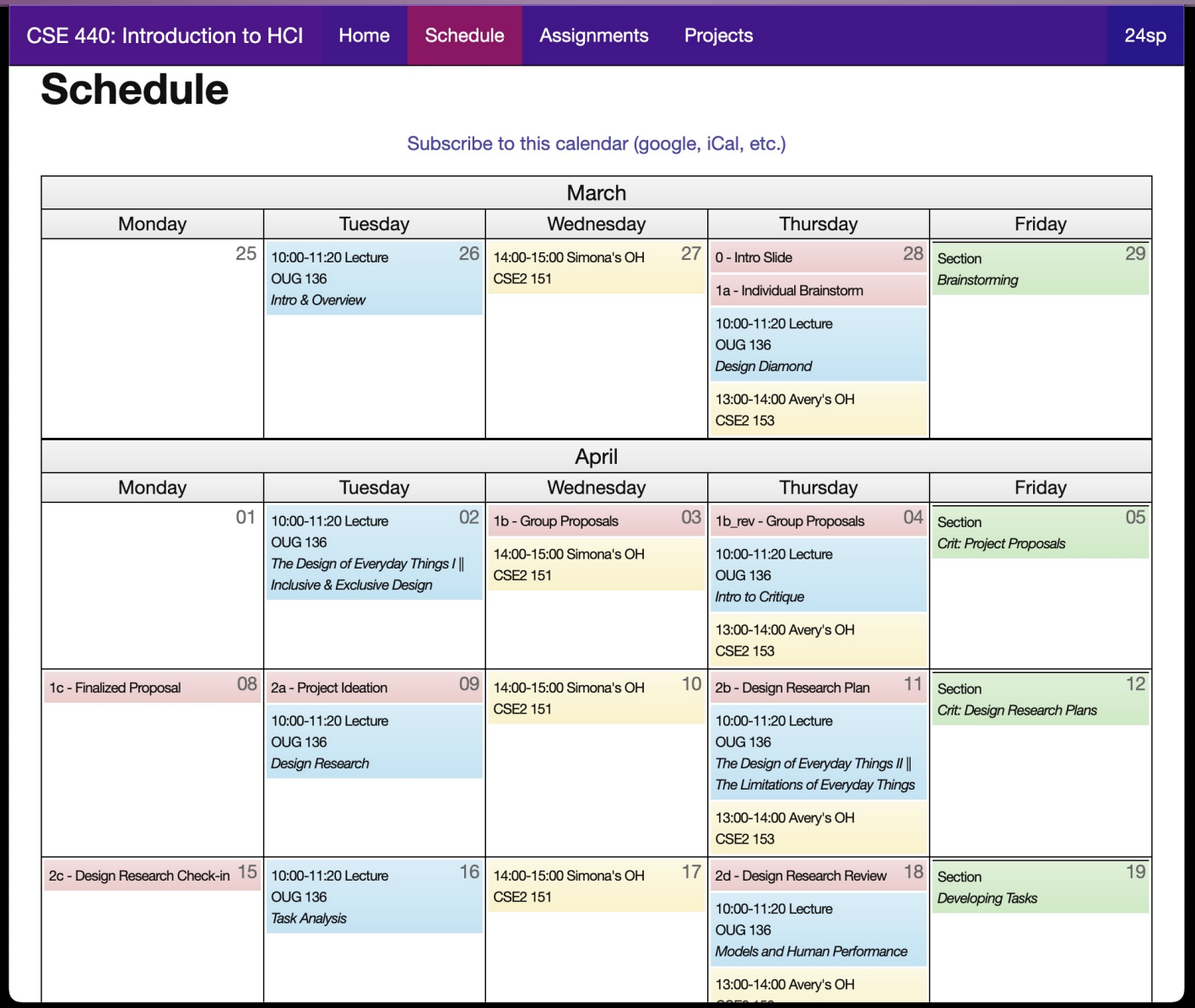
Staying in Touch

Web:	http://www.cs.washington.edu/440 You are responsible for calendar
Email Us:	cse440-staff [at] cs.washington.edu
Email:	You are responsible for course email list
Office Hours:	Posted on calendar, also by appointment Require an email beforehand
Canvas:	I hate Canvas so much but we have to use it for some things
Ed:	Only monitored during Lecture Also for your group formation
Panopto:	I will probably mess it up at least once

Website Overview



Calendar Overview



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Schedule

Subscribe to this calendar (google, iCal, etc.)

March

Monday	Tuesday	Wednesday	Thursday	Friday
25	26 10:00-11:20 Lecture OUG 136 *Intro & Overview*	27 14:00-15:00 Simona's OH CSE2 151	28 0 - Intro Slide 1a - Individual Brainstorm 10:00-11:20 Lecture OUG 136 *Design Diamond* 13:00-14:00 Avery's OH CSE2 153	29 Section *Brainstorming*

April

Monday	Tuesday	Wednesday	Thursday	Friday
01	02 10:00-11:20 Lecture OUG 136 *The Design of Everyday Things I || Inclusive & Exclusive Design*	03 1b - Group Proposals 14:00-15:00 Simona's OH CSE2 151	04 1b_rev - Group Proposals 10:00-11:20 Lecture OUG 136 *Intro to Critique* 13:00-14:00 Avery's OH CSE2 153	05 Section *Crit: Project Proposals*
08 1c - Finalized Proposal	09 2a - Project Ideation 10:00-11:20 Lecture OUG 136 *Design Research*	10 14:00-15:00 Simona's OH CSE2 151	11 2b - Design Research Plan 10:00-11:20 Lecture OUG 136 *The Design of Everyday Things II || The Limitations of Everyday Things* 13:00-14:00 Avery's OH CSE2 153	12 Section *Crit: Design Research Plans*
15 2c - Design Research Check-in	16 10:00-11:20 Lecture OUG 136 *Task Analysis*	17 14:00-15:00 Simona's OH CSE2 151	18 2d - Design Research Review 10:00-11:20 Lecture OUG 136 *Models and Human Performance* 13:00-14:00 Avery's OH	19 Section *Developing Tasks*

Submissions

Many assignments are due day before class

Canvas will often operationalize this as 3pm, sometimes 8pm

A bit more slack, email if a small extension is needed

We need your submissions as part of
our preparation for in-class feedback

Do not use this to undermine self-care or team work:
plan ahead, start early, work together effectively

Grading

We provide a grading scale, but it is somewhat subjective

- Design is subjective, and so is this course

Entire project process is designed for feedback

- Milestone grades mean you did the milestone
- You still must act on feedback as part of continuing to refine and develop your project
- A focus on “doing the work” and “getting feedback” means final grades have more “quality of result”

Grading

Core Content

3.7 of final grade

Project:	65%
Assignment 1 – 5%	
Assignment 2 – 25%	
Assignment 3 – 20%	
Assignment 4 – 15%	
Exam:	25%
Participation:	10%

Grading

Core Content

3.7 of final grade

Project:	65%
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Assignment 4 – 15%	
Exam:	25%
Participation:	10%

Remaining 0.3:

Deeper Engagement with Course Concepts

The EXP System

Point-based system, designed by a team of 440 Instructors

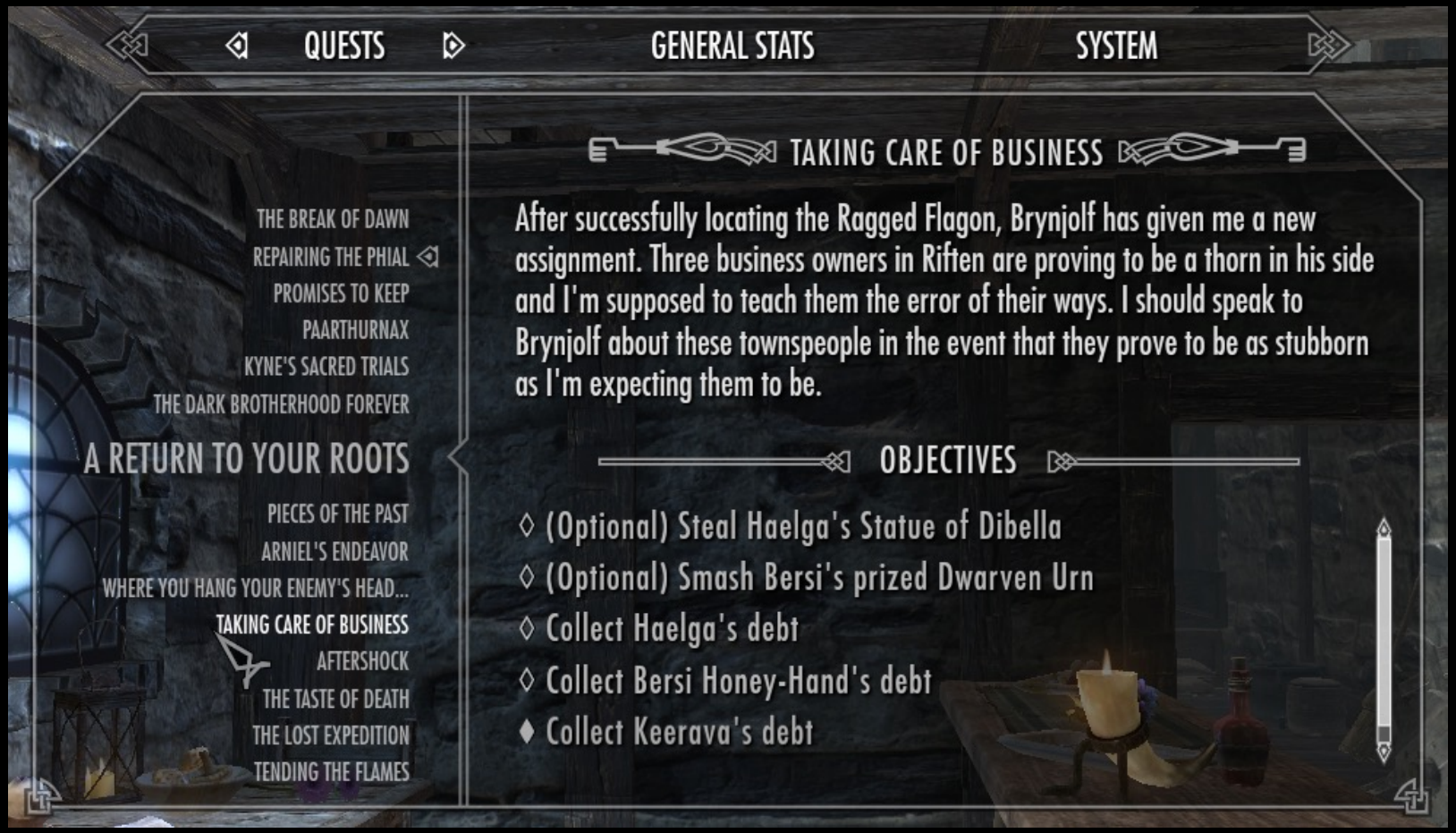
“EXP” = { EXtension / EXcellence / EXperience / EXtra … } Points

Goal: support diverse modes of doing
“deeper engagement” with course content

“EXP”? Really?

A design metaphor:

- A fixed amount of tasks/work
- Additive / Earned
- Plenty of ways to earn them– pick the methods most interesting to you



Ways to get EXP

As part of the project sequence:

EXceptional Milestones:

- For groups with an exceptionally good / thoughtful / creative milestone
- Earned “along the way”– don’t need to do additional assignments

EXtension Objectives:

- Additional tasks you can do on your assignments
- Clearly structured: do X, get EXP

Ways to get EXP

Independently:

EXtra "Weeklies":

- Rant of the Week – Find bad design in the wild & tell us about it!
- Redesign of the Week – Reflect on a prior submission

EXternal Engagement:

- Earned by demonstrating engagement with course concepts OUTSIDE of class
- Up to you to find these opportunities!

Grading

Core Content

3.7 of final grade

Project: 65%

- Assignment 1 – 5%
- Assignment 2 – 25%
- Assignment 3 – 20%
- Assignment 4 – 15%

Exam: 25%

Participation: 10%

EXP

Up to 0.4 of final grade

Conversion Rate:

5EXP = +0.1 to final grade

(Capped at +0.4 for 20EXP)

Section Assignments & Project Groups

Groups of 4 **all in the same section**

If you have specific people you want to work with,
they **must** in the same section as you!

There is no flexibility on group size
or on the same-section rule

Switching Sections

Sections are strictly capped at 16 students

Informal section switching must maintain balance

- Swaps will be “off the books”

Please submit the Section Sorting Google Form ASAP

- Even if you don’t care which section you’re in
  this is extremely useful for helping us balance

Emails will go out finalizing Section Assignment EOD Thursday.
Sections are then LOCKED (no more swapping!)

Adding and Dropping

Attempting to Add

- This class is small & full!
- Hard cap at 32 students due to project sequence
- CSE Policy: non-majors cannot add after Day 1; there will be no adds today :(

Considering Dropping?

- Do so ASAP, before teams form
- Please tell us if you are considering

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Project Theme Reveal!! & Some Relevant Background

Assignment 0

CSE 440: Introduction to HCI | Home | Schedule | Assignments | Projects

Assignment 0: Introduction Slide

Overview

Submit an informal slide that will help us as we get to know you:

- Picture
- Name (e.g., preferred, formal, pronouns)
- Academics (e.g., majors, minors, career goals)
- Year (e.g., 1,2,3,4,5,6,...)
- Background, Interesting Fact, or "What I did on my ..."

Please keep it clean, and understand that your classmates may at some point see this slide.

For example, your slide might be similar to our introduction slides in the first lecture.

Submission

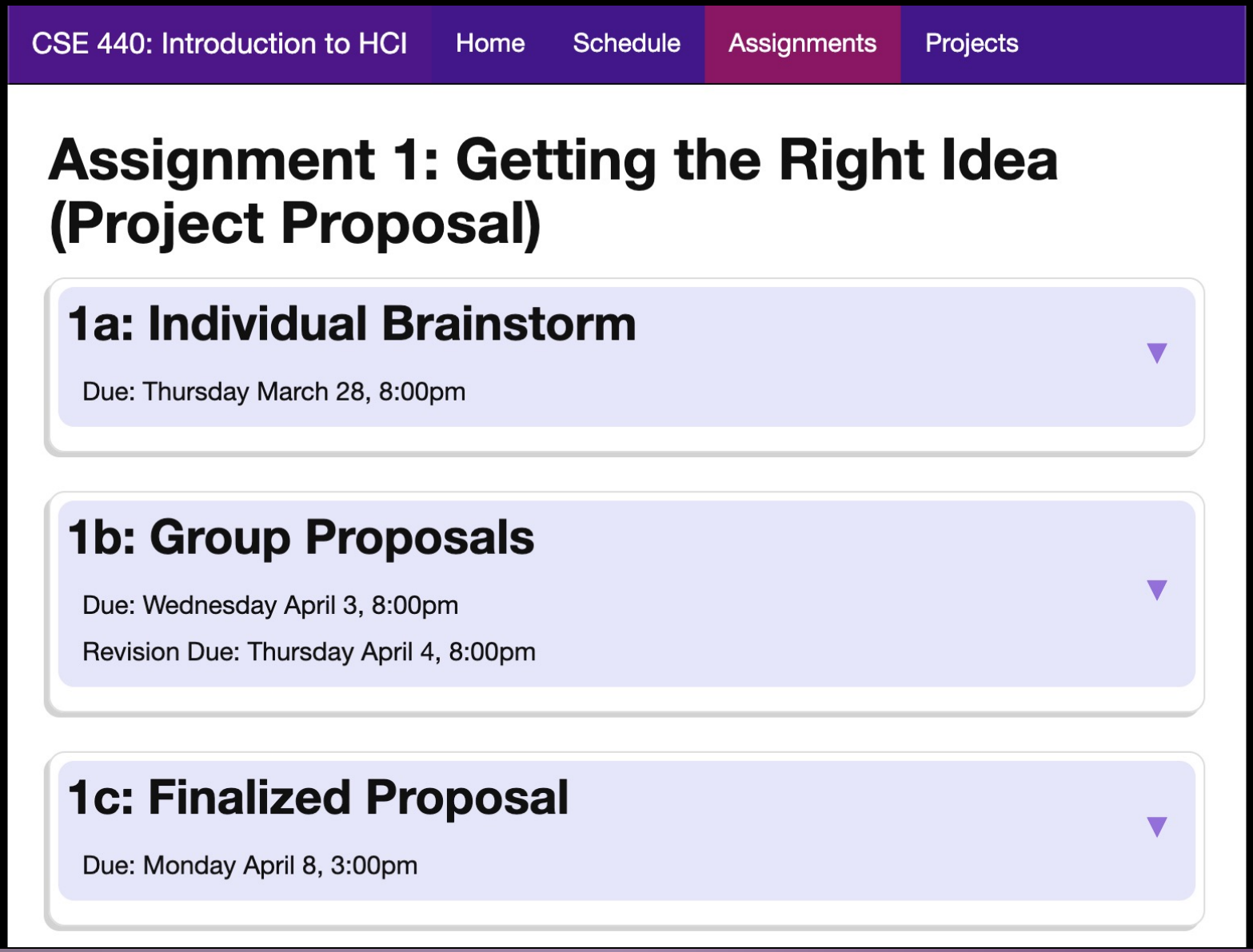
Due: Thursday, January 4, 8:00pm

One page in PDF format. Submit via Canvas here: CANVAS LINK TBD

Grading

This assignment will be graded on a scale of **0 points**.

Assignment 1: Project Proposal



Project Proposal Schedule

Individual Brainstorm Due Thursday

- More Brainstorming in Section Friday

3 Group Proposals Due Monday (4/1)

- Critique in Class on Tuesday
- Revise and Resubmit on Thursday
- Critique in Section Next Friday

Finalized Proposal Due Following Monday (4/8)

Assignment 1a: Project Brainstorm

You have an assignment due Thursday:
https://courses.cs.washington.edu/courses/cse440/24sp/assignments/assignment1.html

Propose 3 "problem spaces" for a project:

- These are starting points for brainstorming

Submit online:

- This proves that you did your preparation
- If unable to access Canvas, submit via email

Bring to section Friday:

- You have more brainstorming ahead of you

Assignment 1b: Group Proposals

You have a Group assignment due Monday:
https://courses.cs.washington.edu/courses/cse440/24sp/assignments/assignment1.html

Three distinct one-paragraph proposals:

- Problem and Motivation
- Not a specific solution (i.e., that's the project)

Use brainstorming Friday to start on groups

- Ed is also available for messaging in sections

Critique on Tuesday, revisions due Thursday
More critique on Friday, then finalized for Monday

Assignment 1c: Finalized Proposal

Due the following Monday (4/8):
https://courses.cs.washington.edu/courses/cse440/24sp/assignments/assignment1.html

One-page proposals of project focus for quarter

- Problem and Motivation
- Analysis of opportunity to be compelling.
- Not a specific solution (i.e., that's the project)

Advice on Project Proposals

Need a problem where a design is relevant

Need to fit in course project structure

- Need access to relevant people
- Need something you can design

Some topics initially appeal,
but ultimately do not support
strong differentiation and learning

- No proposals for projects focused
on home grocery tracking or planning

Friday's Section

Arrive on time, it's a busy section

- Sections are held in MGH 058

Staff will lead you through some brainstorming

- Your 1a submissions as a starting point,
  then additional ideas based on those
- Time at end to find each other for groups
- Best groups come from shared project interest,
  but also be mindful of practical constraints

Bringing Artifacts to Class

Made explicit in 1a Submission:

In Class

In section, be prepared to contribute your initial ideas as part of a larger brainstorm.

Bring a printed copy of your submission, or otherwise have it readily available (e.g., as a photo on your phone).

Bringing Artifacts to Class

Made explicit in 1b Submission:

In Class

Be prepared to discuss your three proposed problems.

Bring several printed copies of your submission,
so you can easily share them with peers for critique.

Missing Section

There will not be a full-section Zoom

- You are welcome to video call in via a friend

Be sure to engage with Ed and/or existing group connections

Critical to stay engaged with project proposal processes

Early Flexibility in Project Groups

Groups will be of size 3 or size 4

Friday's section will encourage you to start to find groups

- There will be TENTATIVE groups formed by end of Section Friday
- Wednesday: group submission of Assignment 1b

Tuesday and Friday critique pairings will be within section

- You can still decide to change groups
- But cannot leave / create an unworkable group size

Groups are finalized with Assignment 1c

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Some Reflection

This will not be an easy course

- Students have said this was their most intense course
- You typically have two deadlines per week
- But I believe in everything that is included

This course challenges some aspects of what the CSE curriculum has taught you is important

- It will be what you make it
- Different personas for whom this course is designed

“Now” vs “When You Need It” Content

This course has both, we will try to distinguish

No mandatory readings

Additional resources will be made available

- If you find others you want to share, email us

Emphasis on language and theory
can be surprising to some students in the exam

People Really Get It

"Very good class that every engineer should have to take. Good perspectives and made me think outside my comfort zone."

"The focus on projects and fieldwork was very well suited to my learning style. I greatly enjoyed this format. The theory and techniques taught in class were directly applicable to the projects we were doing and were usually timed very well. That is, usually the topics presented in lecture were relevant to the current deliverable or the next deliverable."

People Really Get It

"I can't believe I'm saying this, but I found the lectures a huge part of what I learned in this course. They were useful and organized, and each one had a clear message and topic. The assignments were an excellent extension of these themes."

"Fieldwork and iterative assignments really taught me how important the design process is."

Group Work is Hard Work

"the project placed groups in a realistic situation and forced us to work together effectively and practice relevant concepts/strategies"

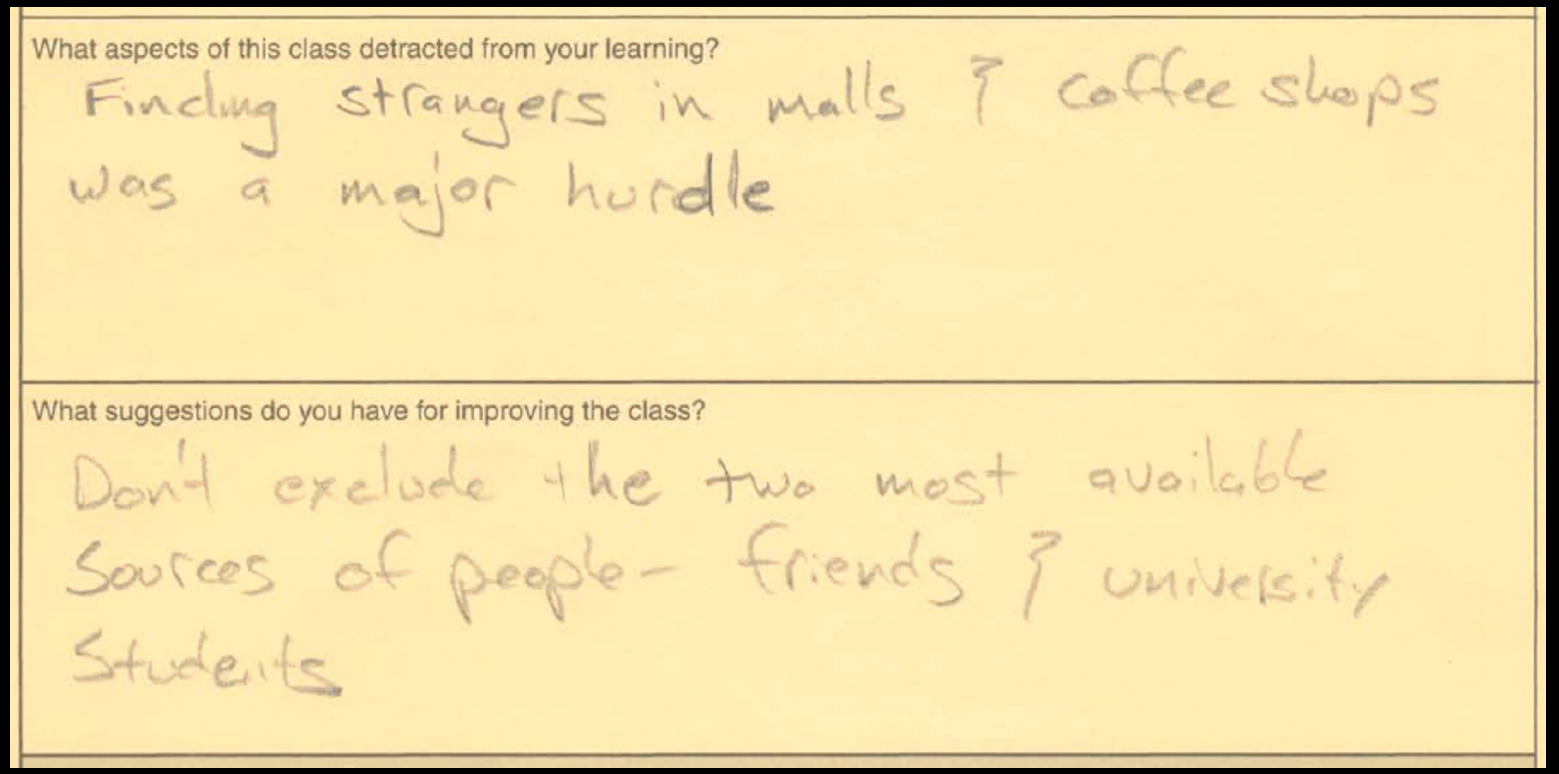
"The group work was distracting because of the lack of unity and sense of purpose. We all had different priorities and purposes for taking the class and this made it really hard to be on the same page for the project which was the biggest part of this class."

Group Work is Hard Work

"Have groups do a team charter - outlining what they expect from one another as teammates. I took a project management course and when working in a group with individuals you've never worked with, the team charter may help break the ice easier when everyone can say what their expectations are."

"… I think that working effectively as a team was the most challenging part of this class …"

And it is not for Everybody



What aspects of this class detracted from your learning?

Finding strangers in malls & coffee shops was a major hurdle

What suggestions do you have for improving the class?

Don't exclude the two most available sources of people - friends & university students

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Your Project Topic:

Designing for Inclusion:

How can we make existing systems & activities more inclusive & approachable to new audiences?

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Designing for Inclusion:

How can we make existing systems & activities more inclusive & approachable to new audiences?

How do designs currently *exclude* certain audiences? How do we amend that?

How can we make it easier for a *new or inexperienced user* to engage for the first time?

“System”?

Look, words are limited

A “System” in this class can be:

- A specific technology
  - (A computer, an app, a wearable, a tangible…)
- A technology + its *context*
  - A *library* computer, a *calendar* app, a smartwatch *used at the gym,* an Alexa *in an older adult’s home*...
- A sociotechnical system
  - Simply put: A context where people interact with technology
  - Can be a physical place (“*library*”), social context (“*student community”*), a process-oriented context (*“studying”*)…
  - Can be specific (“*Ode*”) or generic (“*a library*”)

Intro to Inclusive Design

The Goal: make sure everyone can use the System.

Sounds easy enough, right?

How Designs Exclude

Most Systems are designed with an “intended mode of use”

Designs exclude when:

- Someone *can’t* use it that way

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- Someone would be more comfortable using it a *different* way

How Designs Exclude

Most Systems are designed with an “intended mode of use”

Designs exclude when:

- Someone *can’t* use it that way
- Someone would be more comfortable using it a *different* way
- It becomes *harder for some people* to use it that way

Intro to Inclusive Design

The Goal: make sure everyone can use the system.

~~Sounds easy enough, right?~~
Yeah… no.

But there's got to be some way to make a system work for everyone, right???

Universal Design?

Why don't we just design systems that work for everybody?

The "Curb-Cut Effect" is great—
but not always achievable

Intro to Inclusive Design

The Goal: make sure everyone can use the system.

~~*Sounds easy enough, right?*~~
Yeah… no.

~~*But there's got to be some way to make a system work for everyone, right???*~~

MOST systems end up excluding *someone*.

We like to believe people "tried their best," but…

Navigating Imperfect Systems

If most systems are broken, then how does anyone do anything??

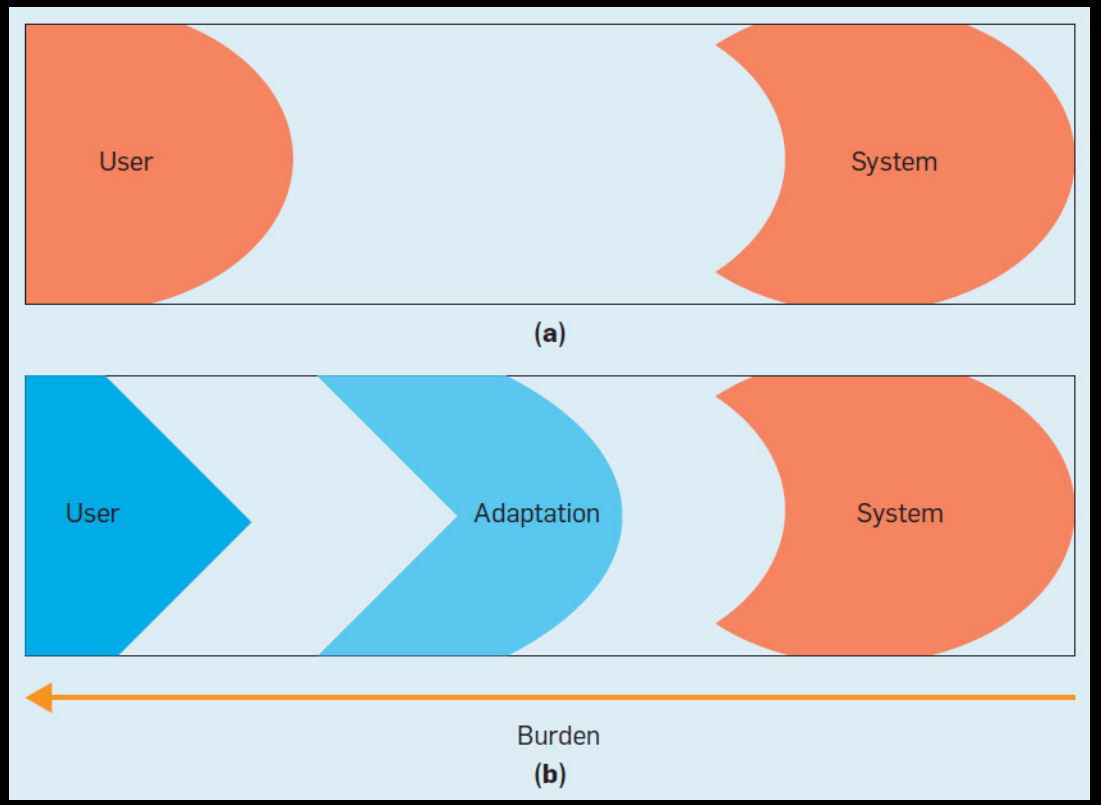
Hacking: everybody does it!

Hacking & Adapting

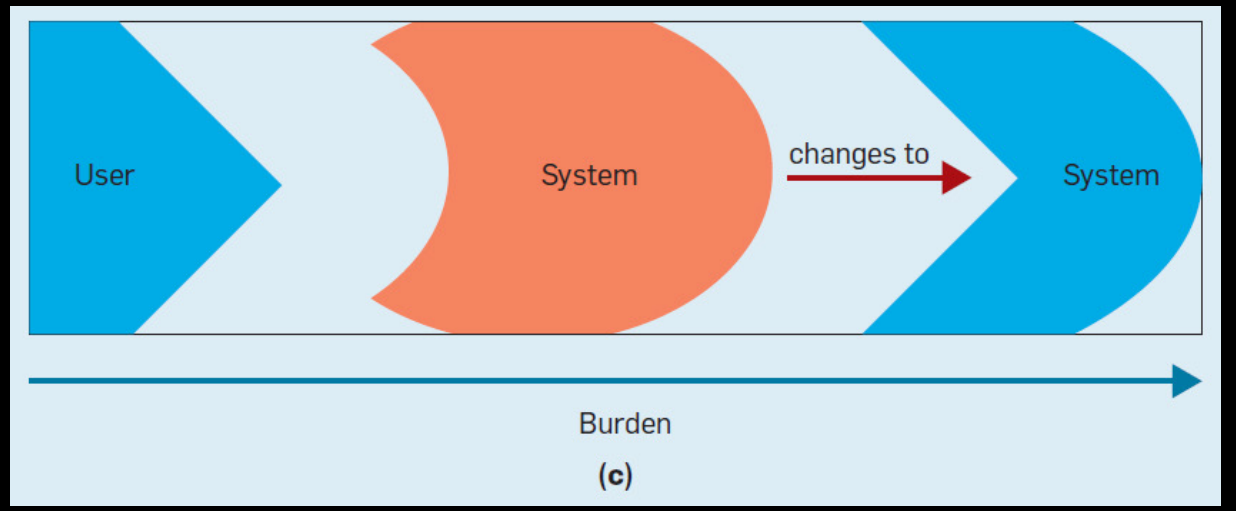
Different styles of hacking & adapting:

- Adapting Expectations – Changing what we expect the interaction to look like
  - "grin and bear it" / "it's just not for me"
- Adapting how we Interact – Using other channels / workarounds
  - Access Tech (AT) / Proxies / (so much more)
- Hacking the System – Modifying the *System* to expect something different
  - Digital: Mods / Physical: Hot Glue

Ability-Based Design



Current "Standard" Paradigm



Proposed ABD Paradigm

Wobbrock et al., "Ability-Based Design". CACM 2018.

Ways to Approach This Topic:

System-First:

- Pick a system (or activity or community or…) that you are passionate about.
  - What groups have *a harder time* engaging with this design?
  - Look at parts of this design: what *assumptions* do they make about their users? Who do they exclude?

Ways to Approach This Topic:

System-First:

- Pick a system (or activity or community or…) that you are passionate about.
  - What groups have *a harder time* engaging with this design?
  - Look at parts of this design: what *assumptions* do they make about their users? Who do they exclude?

Population-First:

- Pick a population that you know well and are passionate about supporting.
  - What systems are this population excluded from?
  - What are attributes of this population that differ from "default" assumptions often made about users? Where do these differences manifest in systems?
  - Think about *assets* of this population: what systems fail to leverage these assets?

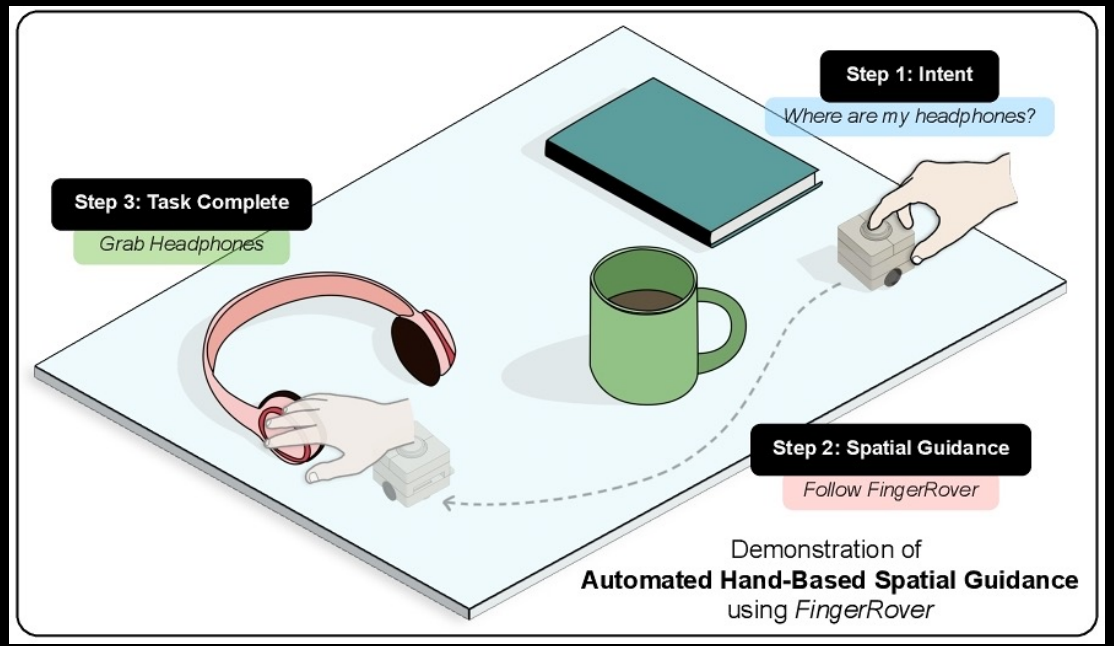
BEWARE: The [Disability] Dongle

BEWARE: The [Disability] Dongle

Good (-ish) Intentions + Lack of Understanding =

BEWARE: The [Disability] Dongle

Good (-ish) Intentions + Lack of Understanding =



Rahman et al., *Take My Hand: Automated Hand-Based Spatial Guidance for the Visually Impaired.* CHI '23

BEWARE: The [Disability] Dongle

Good (-ish) Intentions + Lack of Understanding =

BEWARE: “Be Normal” Designs

If the challenge is that certain audiences navigate the world differently…

…the answer is almost never to try to *“make the audience behave “normally””*

BEWARE: “Be Normal” Designs

If the challenge is that certain audiences navigate the world differently…

…the answer is almost never to try to *“make the audience behave “normally””*

<u>Change the system, not your audience!</u>

Assignment 1a: Individual Brainstorm

Propose 3 “Problem Spaces”

Each problem space must include:

- What’s the context? (Activity / System / Tool, etc)
- Who’s the audience?
- What’s the problem?

Example:

Critique is an important part of the artistic process.
However, artists who are introverted or have social anxiety
can have a hard time getting feedback from others.

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Across your 3 ideas:

At least 2 different contexts

At least 2 different audiences

Ways to Approach This Topic:

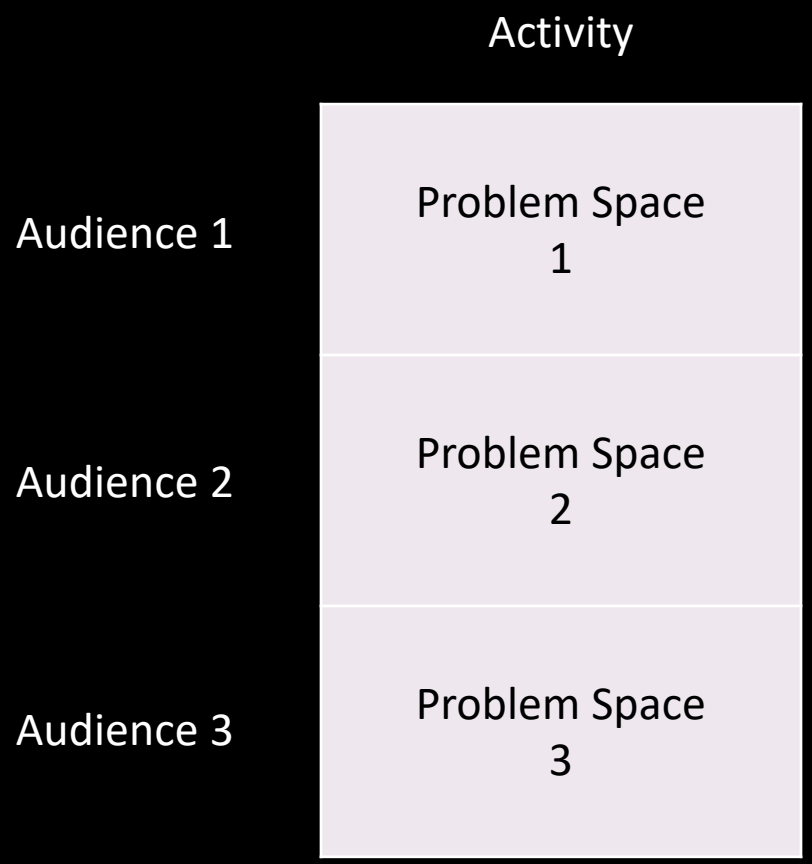
System-First:

- Pick a system (or activity or community or…) that you are passionate about.
  - What groups have *a harder time* engaging with this design?
  - Look at parts of this design: what *assumptions* do they make about their users? Who do they exclude?

Population-First:

- Pick a population that you know well and are passionate about supporting.
  - What systems are this population excluded from?
  - What are attributes of this population that differ from "default" assumptions often made about users? Where do these differences manifest in systems?
  - Think about *assets* of this population: what systems fail to leverage these assets?

Brainstorming Ideas



Brainstorming Ideas

	Activity/System 1	Activity/System 2	Activity/System 3
Audience	Problem Space 1	Problem Space 2	Problem Space 3

Brainstorming Ideas

	Activity/System 1	Activity/System 2	Activity/System 3
Audience 1	Problem Space!		
Audience 2		Problem Space!	
Audience 3			Problem Space!

Brainstorming Ideas

	Activity/System 1	Activity/System 2	Activity/System 3
Audience 1	Problem Space!	?	?
Audience 2	?	Problem Space!	?
Audience 3	?	?	Problem Space!

Are these all *actual* problems?

(This is all you need to do to get an EXP for 1a!)

Jesse's Tips

I've seen so many 440 projects…

The best ones:

- Are related to a topic you're actually interested in
- Explore a problem people are familiar with
- Leverage students' own expertise
- AIM to do something unusual / exciting / surprising

Reasons to Care:

- This is the most complete design you will develop in a CSE course
- There are so many artifacts you create along the way to put in a portfolio
- You can actually turn these designs into lasting project

CSE 440:
Introduction to HCI

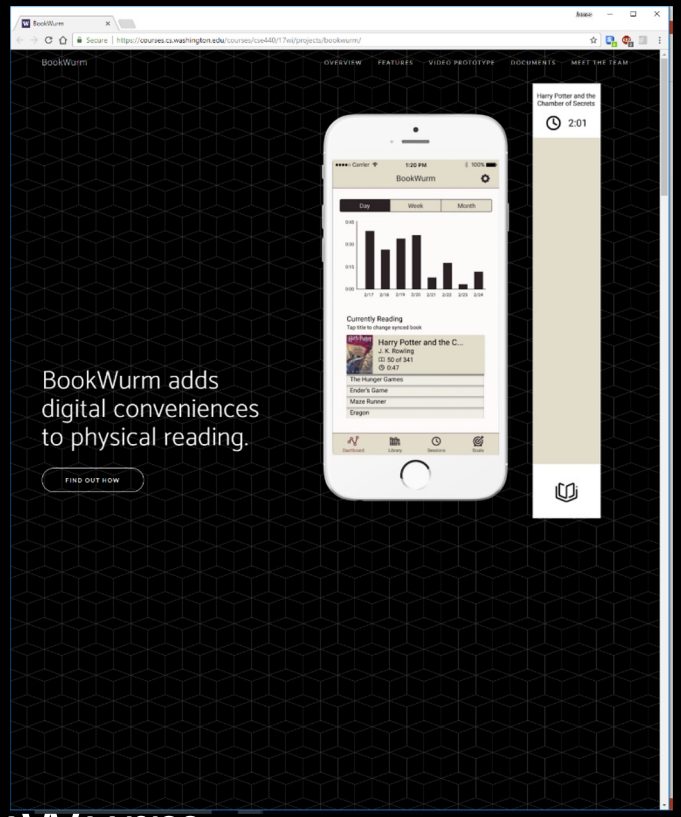
01: Introduction to HCI

March 26, 2024

Jesse J. Martinez | Avery Mack | Simona Liao

PS: Past Project Showcase

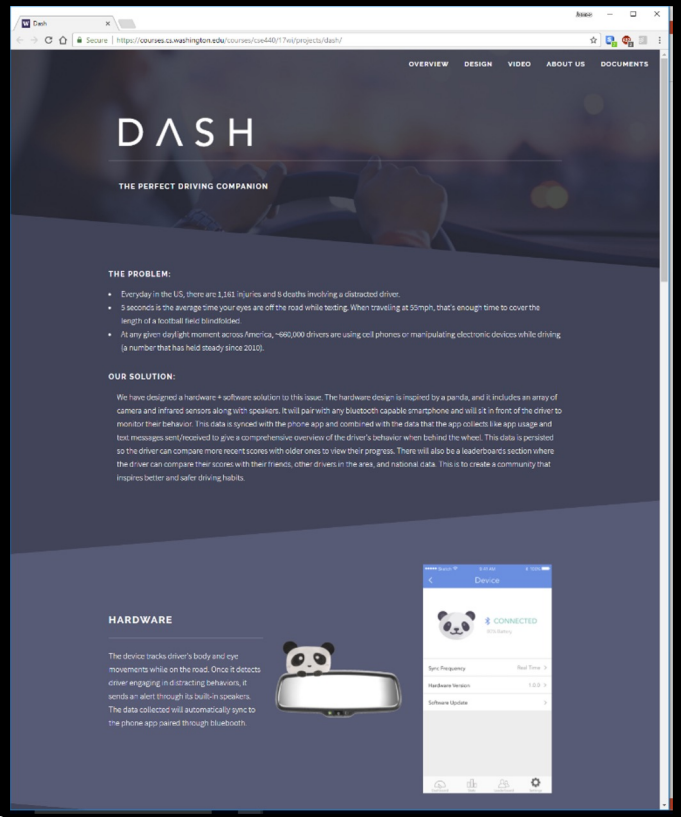
Learn by Example from Prior Projects



BookWurm:

https://courses.cs.washington.edu/courses/cse440/17wi/projects/bookwurm/

Learn by Example from Prior Projects



Dash:

https://courses.cs.washington.edu/courses/cse440/17wi/projects/dash/

Learn by Example from Prior Projects

Hermes:

https://courses.cs.washington.edu/courses/cse440/17au/projects/hermes/

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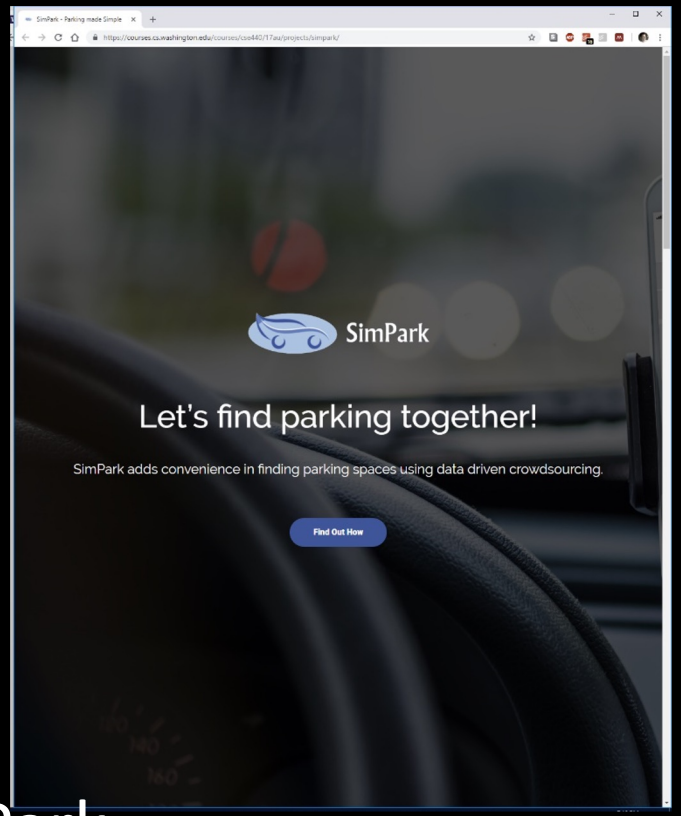

SimPark:

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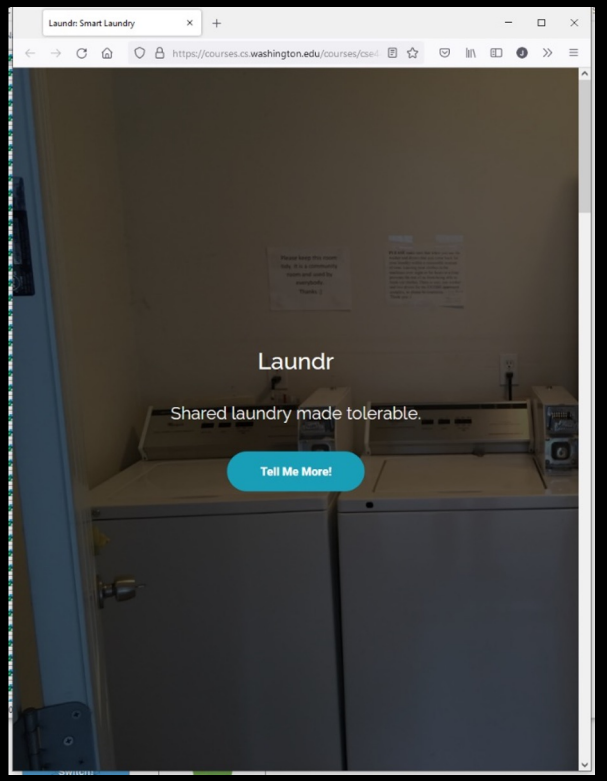

Laundr:
https://courses.cs.washington.edu/courses/cse440/19wi/assets/projects/laundr/

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notE:

https://courses.cs.washington.edu/courses/cse440/19wi/assets/projects/note/

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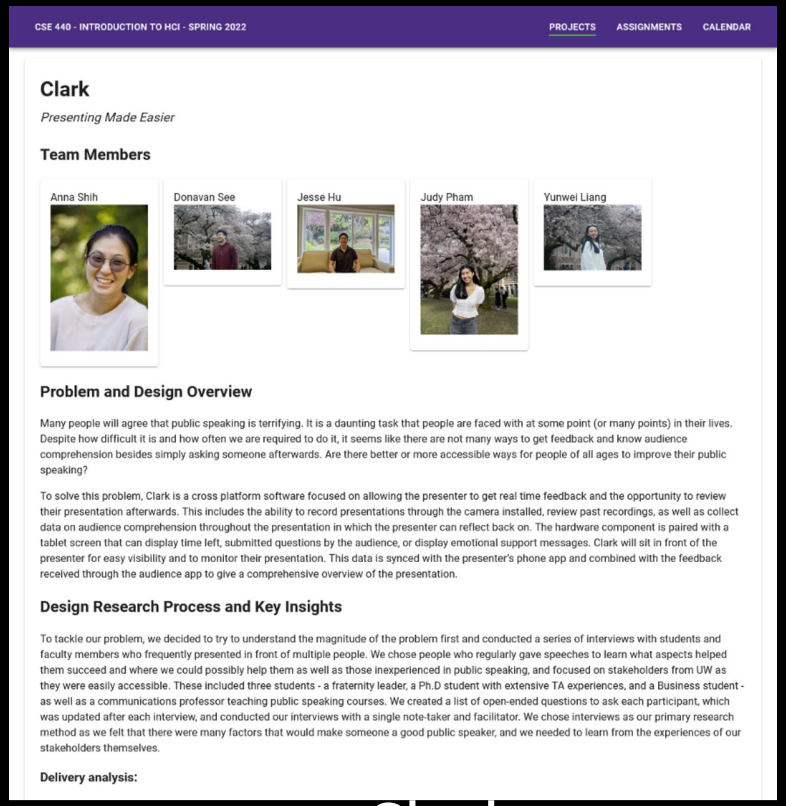

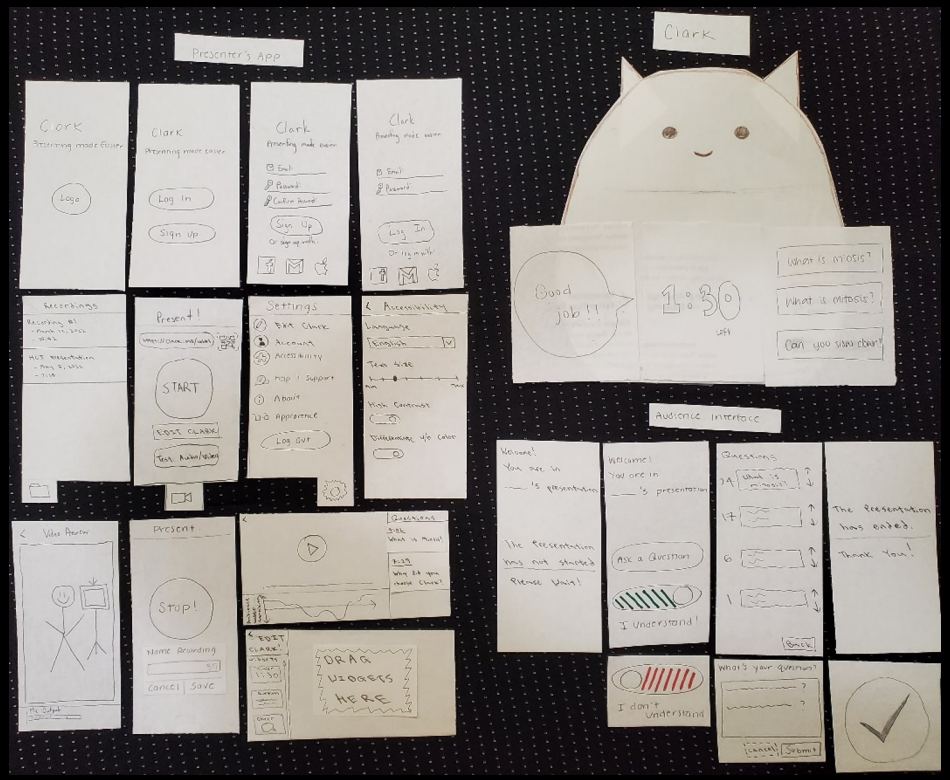

Clark:

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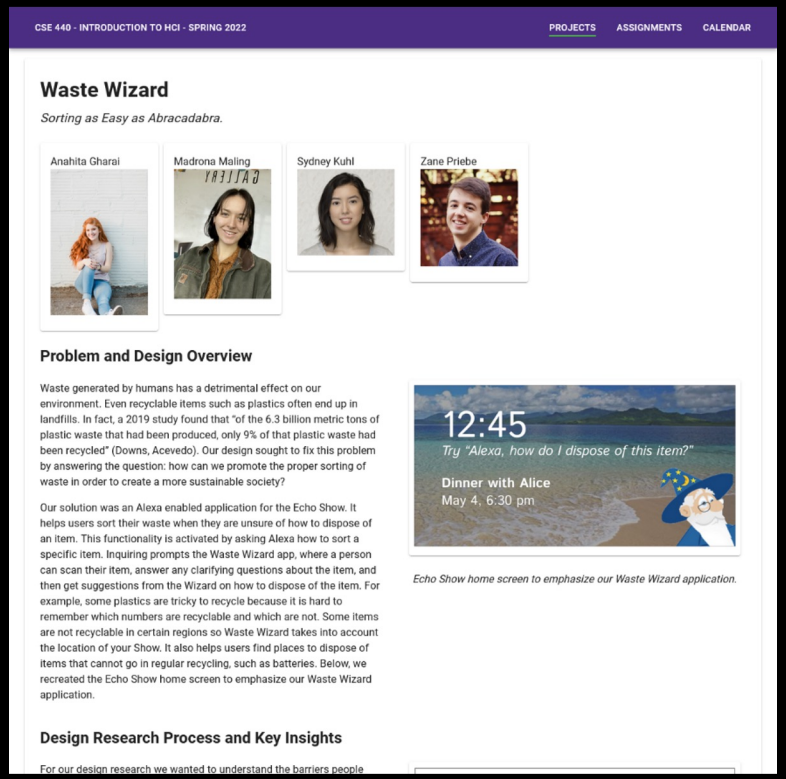

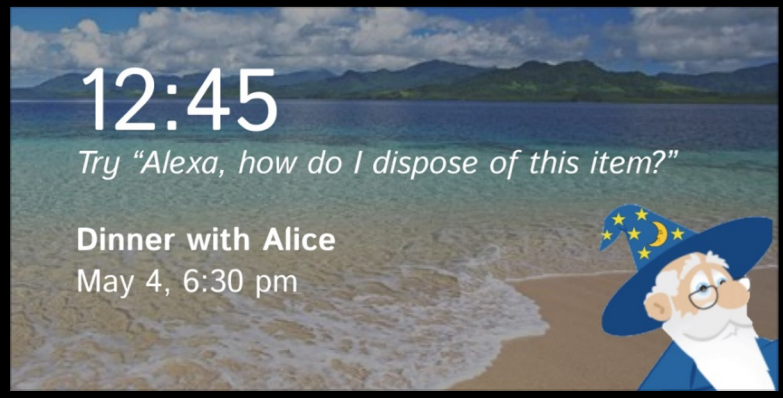

Waste Wizard:

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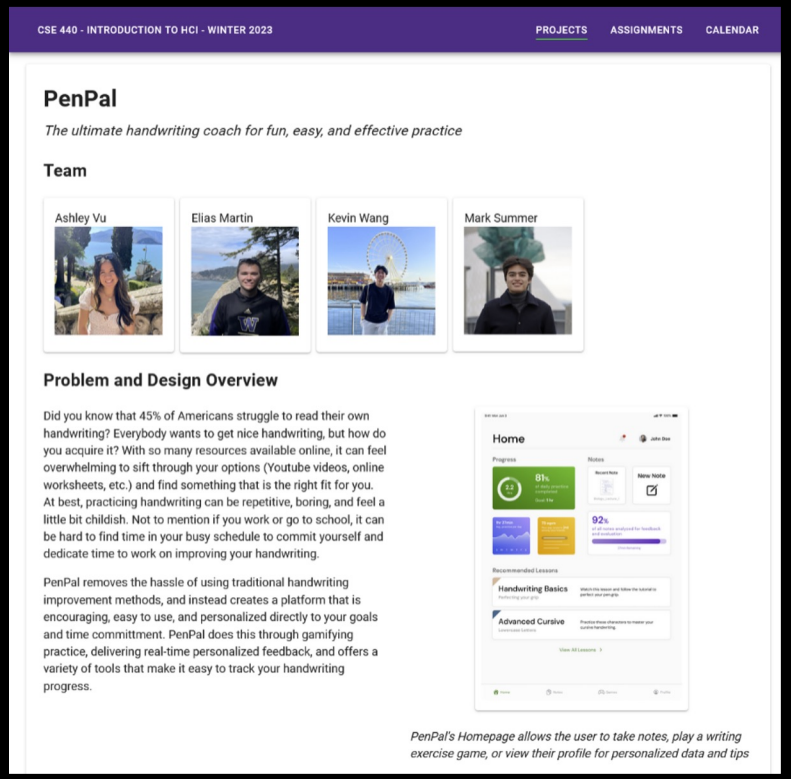

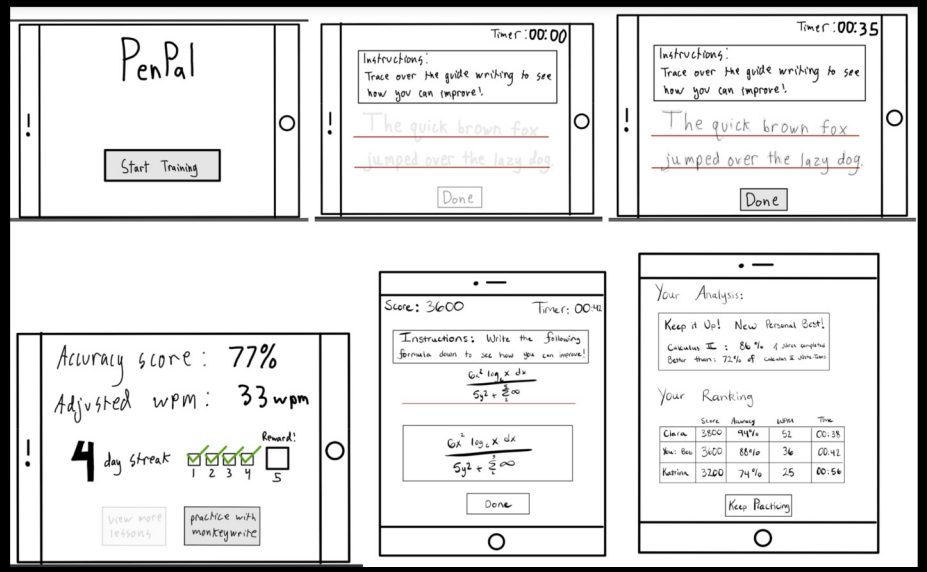

PenPal:

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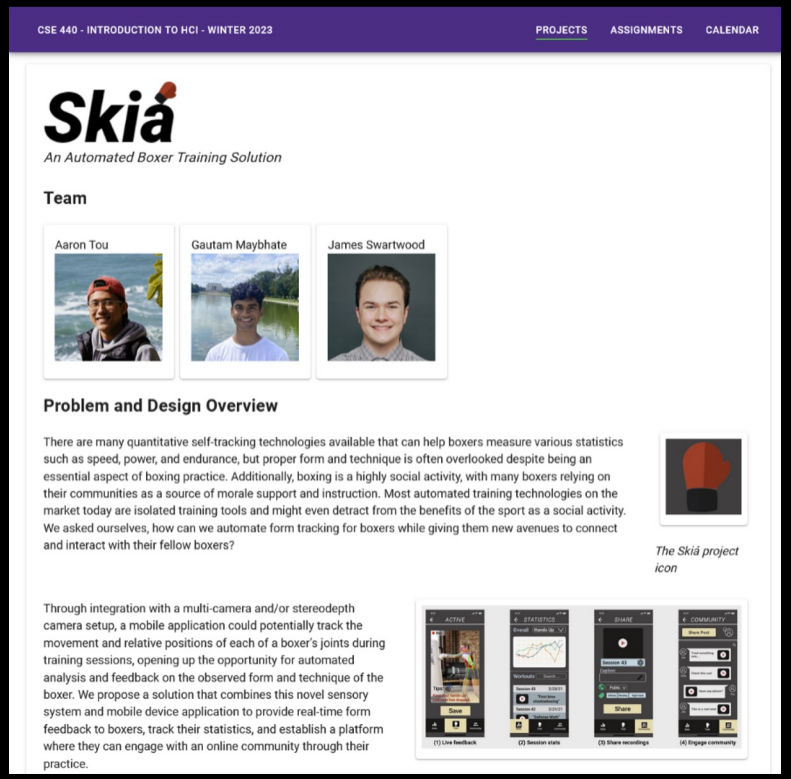

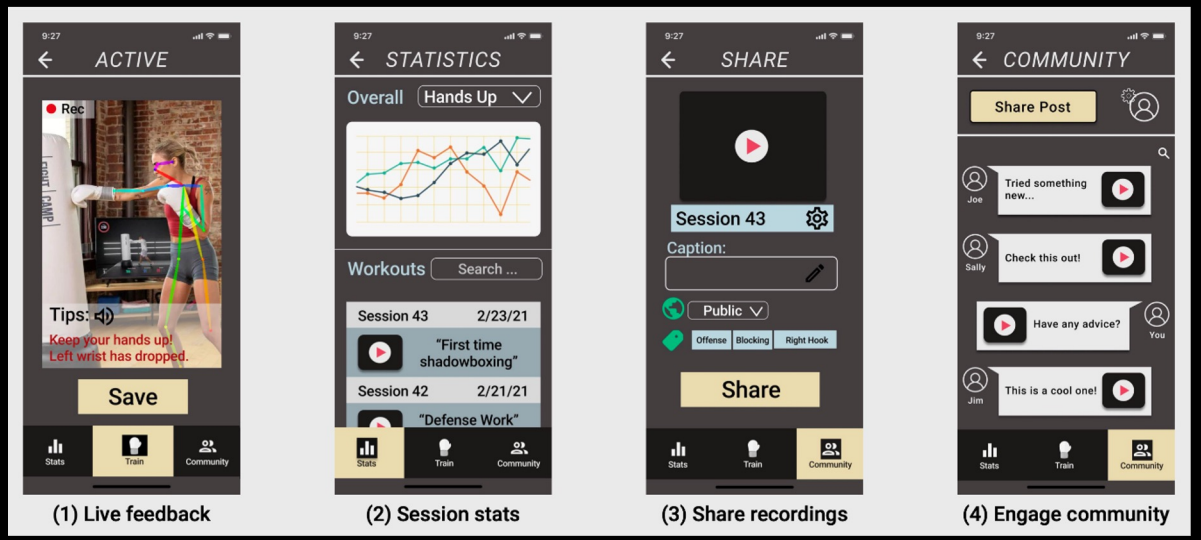

Skia:

https://courses.cs.washington.edu/courses/cse440/23wi/projects/skia/