

Course Overview

**CPSC 544 Fundamentals in Designing Interactive
Computational Technology for People**

2023W1 - Week 1

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Material created by Joanna McGrenere, Leila Aflatoony, Karon MacLean, Jessica Dawson & Heather O'Brien

Land Acknowledgement



Paul H. Joseph / UBC Brand & Marketing
"s?i:tqəy'qeqən (Double-Headed Serpent Post)"
Brent Sparrow Jr., Musqueam
UBC Vancouver campus

What is a land acknowledgement? UBC Student Services <https://students.ubc.ca/ubclife/what-land-acknowledgement>

Musqueam and UBC Indigenous Portal: <https://indigenous.ubc.ca/indigenous-engagement/musqueam-and-ubc/?login>

Native Land: <https://native-land.ca/>

CPSC 544 – 2023W1

Course staff

Instructor:

Prof. Karon MacLean
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Teaching Assistants:



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What is HCI (human computer interaction)?

Or HCD (human centered design)?

in HCI, think about what's meant by...



Human *Interaction* Computer

Step 1 – Think: On your own, draw and label examples for **all 3** on a piece of paper.

Stuck?

- Prompts: *what did you do for dinner last night?*
- 4 minutes

Step 2 – Pair: Join up with 2-3 other students.

Step 3 – Share: Briefly introduce **yourself** and your **drawing**

- 6 minutes total – make sure gets a turn!

Human-Centered design (HCD)

The process of ensuring that people's needs are met, that the resulting product is understandable and usable, that it accomplishes the desired objectives, and that the experience is positive and enjoyable.

HCD is a procedure for addressing these requirements, but with an emphasis on two things:

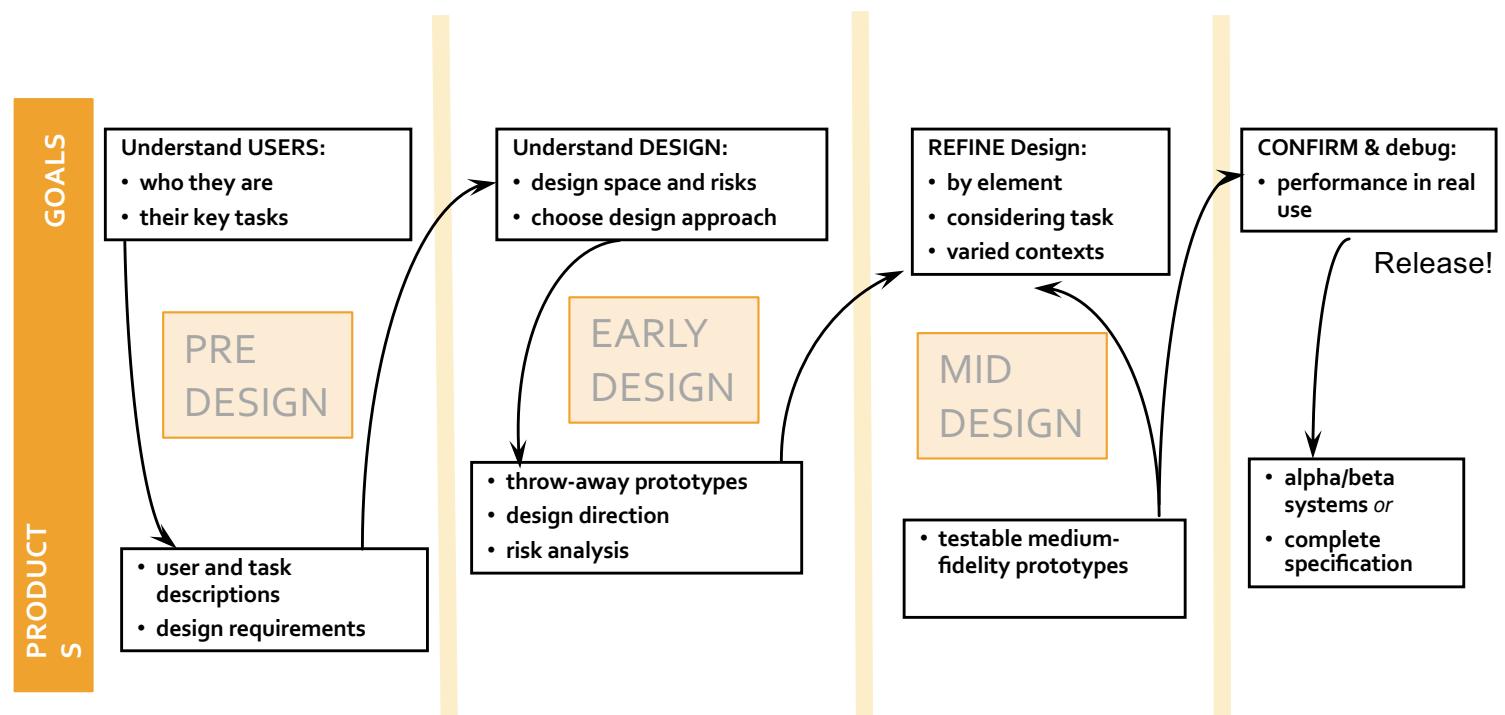
Solving the right problem,

Doing so in a way that meets human needs and capabilities.

- Norman, *The design of everyday things*, p. 219)

Not the same as technology-centered design or marketing

Human Centered Design Process



Why Human Centered Design Matters...

CPSG 544 – 2023 W1



Canada's COVID Alert app is a case of tech-driven bad policy design

August 13, 2020 4:50pm EDT

Podium placards promoting the COVID Alert app are seen on a table on Parliament Hill in Ottawa, on July 31, 2020. THE CANADIAN PRESS/Justin Tang

Email

Twitter

6

Facebook

190

LinkedIn

Print

The July 31 release of Canada's COVID Alert app was greeted with almost universal praise. [Privacy experts applauded](#) its strong privacy protections, echoing the [official app website's](#) extensive detailing of how "your privacy is protected," including a link to an [entire other page](#) that explains "how COVID Alert protects your privacy," which in turn links to [Health Canada's privacy assessment of the app](#).

Author



Blayne Haggart

Associate Professor of Political Science, Brock University

Disclosure statement

Blayne Haggart receives funding from the Social Sciences and Humanities Research Council of Canada.

Who does HCI?

It's a multidisciplinary area...

On the purely machine side:

computer graphics
operating systems
programming languages
development environments
networking
software engineering
usability and user experience
engineers
and increasingly...
industrial & product design
digital media processing
information science
robotics

On the human side:

psychology and kinesiology

- cognitive, perceptual and motor behavior
- human capabilities to use and learn machines

sociology and anthropology

- group and cultural behavior

neuroscience

art and graphic + tactile design

- visual design principles and aesthetics

What makes it HCI?

Where they come together:

- the joint performance of activities by humans and machines
- the structure of communication between human/computer and human/human mediated by computers

A discipline that applies human-centered design methods to the design of interactive technologies... and increasingly, uses the design thinking framework.

Course Coverage & Structure

What kind of a class is this?

- Research-focused
- Project based and interactive: hands-on
- Group-oriented: team-based learning practices
- Many new skills (depending on your background)
- Much less coding than other CS courses
- Heavy demands on your ingenuity and your people skills

Course Topics

- Design Thinking
- Field methods (observations, surveys, interviews) and data analysis
- Ethical engagement with participants
- Affinity diagrams, personas & journey maps
- Tasks, task analysis and requirements
- Conceptual designing and sketching
- Prototyping
- Prototype evaluation (“discount methods,” usability testing, experiments)
- Special topics - TBD

Two Workshops – Required for DFP students, open to all:

- Literature Reviews
- Intellectual Property and Patents

Course Elements

Classes

- Brief lectures, discussions, in-class activities, “working classes”
- *Bring your laptop – often needed*

Researcher journals (10%)

- Pre-class preparation on readings (13 assigned; use top 5 marks)

Team Project – Evaluated through milestone deliverables (80%)

- Primarily group-based (including all marking)
- Build upon one another

Participation (10%)

- Attendance, classroom activities & discussions, peer review
- Self-reflection on contributions to design project

Logistics & Tools

Course Communication and Access

- **Classes** in-person (DFP classroom) and **Labs** (for team project work w/ TAs)
- Integrated Course Schedule: google sheet available through Canvas
- **Primary Communication: 544 Slack**
 - Class-wide announcements
 - Non-confidential course staff questions, discussion
 - Informal class discussions (nothing marked)
 - Team channels for team communication (if you want)
 - The Slack is yours – create your own channels (we'll create team channels for you)
- **Canvas** (course learning management system): *confirm you have access now?*
 - Assignment details and submission
 - Researcher Journal (accessed through either "Discussion" or "Assignment" sections)
 - Access course materials and view interim mark components
- **Instructor confidential:** email (maclean@cs.ubc.ca)

Canvas Home Page

Read/do #1-3 – today
#4 good to look at too

Fundamentals in Designing Interactive Computational Tools

Instructor Team	Course Content								
<table><thead><tr><th>Role & Name</th><th>Drop-in Hours</th></tr></thead><tbody><tr><td>Prof. Karon MacLean Email: maclean@cs.ubc.ca Office: ICICS x641</td><td><ul style="list-style-type: none">Mon+Wed, 11:30-12:00: Classroom (after class)By arrangement (slack): Zoom</td></tr><tr><td>TA: Devyani McLaren</td><td><ul style="list-style-type: none">Classroom (after class)By arrangement (slack): Zoom</td></tr><tr><td>TA: Mui Tanprasert</td><td><ul style="list-style-type: none">Classroom (after class)By arrangement (slack): Zoom</td></tr></tbody></table>	Role & Name	Drop-in Hours	Prof. Karon MacLean Email: maclean@cs.ubc.ca Office: ICICS x641	<ul style="list-style-type: none">Mon+Wed, 11:30-12:00: Classroom (after class)By arrangement (slack): Zoom	TA: Devyani McLaren	<ul style="list-style-type: none">Classroom (after class)By arrangement (slack): Zoom	TA: Mui Tanprasert	<ul style="list-style-type: none">Classroom (after class)By arrangement (slack): Zoom	<ul style="list-style-type: none">Lecture: MW 10-11:30Lab: Th 10-11 (FSC)Information about reading dates: Integrated course scheduleAssignment details & submissionStud-Staff and Student SupportConfidential student support
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544-Specific Links

- #1 [Detailed Syllabus](#) - read carefully at class start
- #2 [Integrated Schedule](#) for in-context dates and links
 - Access [544 Library Reserve Readings](#)
 - Access list of [Lecture slides](#)
- #3 [Join the 544 Slack Project](#)
- #4 [Find Tools for your Project](#)

Assignments

2022W1

Home
Syllabus
Announcements
Discussions
Assignments
Rubrics
Grades
Zoom
Quizzes
Files
Outcomes
Modules
Pages
People
Settings

80% of Total + :

Design Project

- Design Project Objectives
- A. Empathize: Literature review and environmental scan
Due Sep 25 at 11:59pm | 15 pts
- B. Define 1: Conducting Field Work - Draft Ethics Materials
Due Sep 26 at 10am
- B. Define 2: Conducting Field Work - Team Report
Due Oct 4 at 11:59pm | 15 pts
- C. Ideate 1: Tasks, Requirements & Personas
Due Oct 16 at 11:59pm | 10 pts
- C. Ideate 2: Conceptual Models & Sketches
Due Oct 25 at 11:59pm | 10 pts
- E. Evaluate: Cognitive Walkthrough of Lo-Fi Prototypes - in-class activity (Nov 16th 2022)
Due Nov 16 at 10am
- D. Prototype: Low-Fidelity Presentation
Due Nov 14 at 11pm
- E. Evaluate: User Test

Rubrics can be found on Canvas for the *Participation* and *Design Project* Assignments

under Rubrics or below the Assignment Descriptions

#2 Integrated Schedule

Find on Canvas

Your first deliverable is a “**reading journal**”:

- linked in ISched
- Found in UBC library reserve (*or on Canvas*)
- Due Sunday 4pm
(RJs generally : Sun or Tues 4pm)

Also links to:

- Lecture slides
- Links & info for other deliverables

	Class	Week Topics		Week's Advance Readings	Deliverables See Canvas for due times	Due Date
Wk 1						
Sep 06	C1	Intro to course Intro to HCI [slides]	R1	Norman, Donald A. <i>The Design of Everyday Things</i> . Basic Books, 01/01/2013. Web. 31 Aug. 2011. [link] or [download on Canvas -Researcher Journal #1 page] - Chapter 1. The psychopathology of everyday things - Chapter 6. Design Thinking	(a) Researcher Journal R1 General instructions on Canvas; due 4pm	Sun 09/10
Wk 2			R1	Tranum, Sarah. (2021). Designing a circular, regenerative food system. Trickle Up Design [podcast]. Available, https://www.trickleupdesign.com/podcast/episode-1-designing-a-circular-regenerative-food-system Do before class C2:	(b) Project topics (read before class) [link]	Sun 09/10
Sep 11 Monday	C2	Project scoping & team formation Intro to Design Thinking [slides]		Do before class C2:	(c) Design Project overview (skim all deliverable descriptions - before class) [Canvas / Assignments]	Sun 09/10
				Do before class C2:	(d) World Cafe In-class activity: signup for 3 topics before class [link]	Mon 09/11
				Do after class C2:	(e) Background information survey (Proj Assign 0); complete soon after class) [Canvas assignment link]	Tue 09/12
Sep 13 Wednesday	C3	Literature Review Workshop By guest UBC Librarian Aubrey Geyer <i>DFP deliverable</i>		No pre-readings; - See pre-survey under Deliverables (complete prior to class) - In-class slides, handouts and other resources [link]	(a) Literature review workshop pre-survey [link]	Tue 09/12
Sep 14 Thursday	Lab-W2			Work on: discuss project concepts, team formation		
Wk 3						
Sep 18 Monday	C4	Field Methods [slides]	R2	Blomberg, J., Burrell, M., and Guest, G. (2012). An ethnographic approach to design. Chapter 45. In Jacko, J. and Sears, A. (Eds.) <i>The Human Computer Interaction Handbook</i> (pp. 1025-1051). Mahwah, NJ: Lawrence Erlbaum Associates. [download on Canvas -Researcher Journal #2 page] - Read up to last column on p. 1035	(a) Researcher Journal R2	Sun 09/17
				Fontana, A. and Frey, J. (1994). Interviewing: The Art of Science. In Denzin, N. and	(b) TCPS-2 (ethics tutorial):	19 Sun 09/17

What to do and how ^{Due}
to hand it in

Where to find it

Readings usually due
Sun or Tues 4pm

#3 Slack

Join Slack right now
if you have your laptop or phone
with you

Useful later in class today

- see invite on Canvas

[invite link here too]

- Join as: "JaneD"

(your first name + last-name initial)

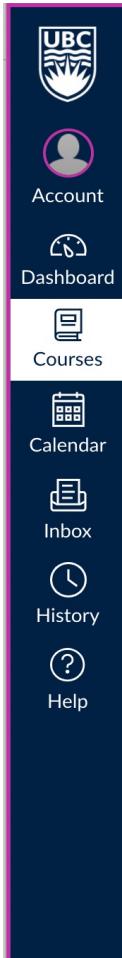
The screenshot shows the Slack interface for the 'cpsc544-2023w1' workspace. The left sidebar shows a navigation menu with options like 'Unreads', 'Threads', 'Later', 'Direct messages', 'Mentions & rea...', 'Drafts & sent', 'More', 'Starred', and a list of channels including '#_general' (which is highlighted), '#_lectures', '#_project', '#_project-topic...', '#_random', '#_readings', '#_tools-and-reso...', '+ Add channels', and 'Direct ...'. The main area displays the '#_general' channel. At the top of the channel view, there is a message from 'MuiT (TA)' pinned at 11:40 AM: 'Welcome to the CPSC 544 Slack workspace! Slack is our primary mode for "ephemeral" communication (Canvas is for authoritative information, e.g. deliverable details and rubrics, and deliverable submissions). Slack, on the other hand, is a great way to ask questions to your course staff (@KaronM (inst), @<name current TAs>) and work with teammates and other fellow students. This will be especially important when you are all working on your term projects. Let's make this a safe, inclusive and helpful place by following these guidelines:'. Below this message is a numbered list of guidelines:

1. Be respectful with your words, and remember that "no question is dumb." We all come from different places.
2. Please identify yourself as FirstnameLastnameinitial (e.g. JaneD) - to allow classmates to identify you while maintaining privacy.
3. Do your best to respond to any requests made of you in a reasonable time, and also respect other's reasonable response times. Grad school can be hectic, be open about your availability and be conscious that others are also busy
4. Use Slack channels appropriately.
 - a. '#_general' is for general course questions and for the course staff to give all students important course information.
 - b. '#_readings', '#_project' and '#_lectures' are to focus questions and discussion about each of these course components (remember, documentation and submission is on Canvas).
 - c. You will have a team-specific channel once we form teams
5. Please thread conversations to keep channels tidy and readable -- Use the "reply/thread"

At the bottom of the channel view, there is a message input field with the placeholder 'Message #_general' and a toolbar with various text formatting icons.

A large blue star in the top right corner contains the text 'Activity (sort of)'.

#4 Tools



Discussions

Assignments

Library Online
Course Reserves

Grades

Course Evaluation

Zoom

Pages

People

Project Tools - Ethics, Prototyping, Collaborating

Please add any tools that you think might assist your colleagues in collaborating on the course projects and product deliverables. Feel free to include your name in case someone wants to follow up with you for information.

Examples of low to medium fidelity prototypes

[544-Prototype-presentation-example-anonymized.pptx](#) ↓

[544-Prototype_presentation_example2-anonymized.pdf](#) ↓

Working collaboratively as a group

See [Collaboration Software Tools](#)

Ethics

[Updated](#), approved ethics application: [CS HCI Course Projects](#) ↓

[BREB Guidelines for Research Using Social Networking Sites](#) ↗

[Call for participation](#) ↓ [for recruitment]

Sample consent forms [for interviews and questionnaires; not needed for observation]:

- [General](#) ↓
- [Questionnaire only](#) ↓

Sample Instruments:

- [Interview protocol](#) ↓
- [Questionnaire](#) ↓
- [Sample Instruments](#) ↓ [this is not part of the course ethics application, but added by Heather from work with students on research project courses]

Course policies: detailed in Syllabus

Syllabus: via Canvas – read carefully for info on marks, teamwork, inclusivity, and more

Emphasize here: health and common sense

- In the classroom: general UBC policies (and encouragements) apply
- For human subject studies run in-person: be even more careful
 - More on this later, but keep it in mind
 - You will do human-subject study(ies) for your project; choice about in-person vs online

Missing class for your health

- If you might be sick – please stay home. **See syllabus** for how we'll try to make this work.
- **But come to class otherwise – it really makes a difference!**

Instructor/TAs missing class for health-related reasons: syllabus outlines what to expect



Questions?

Sample Projects

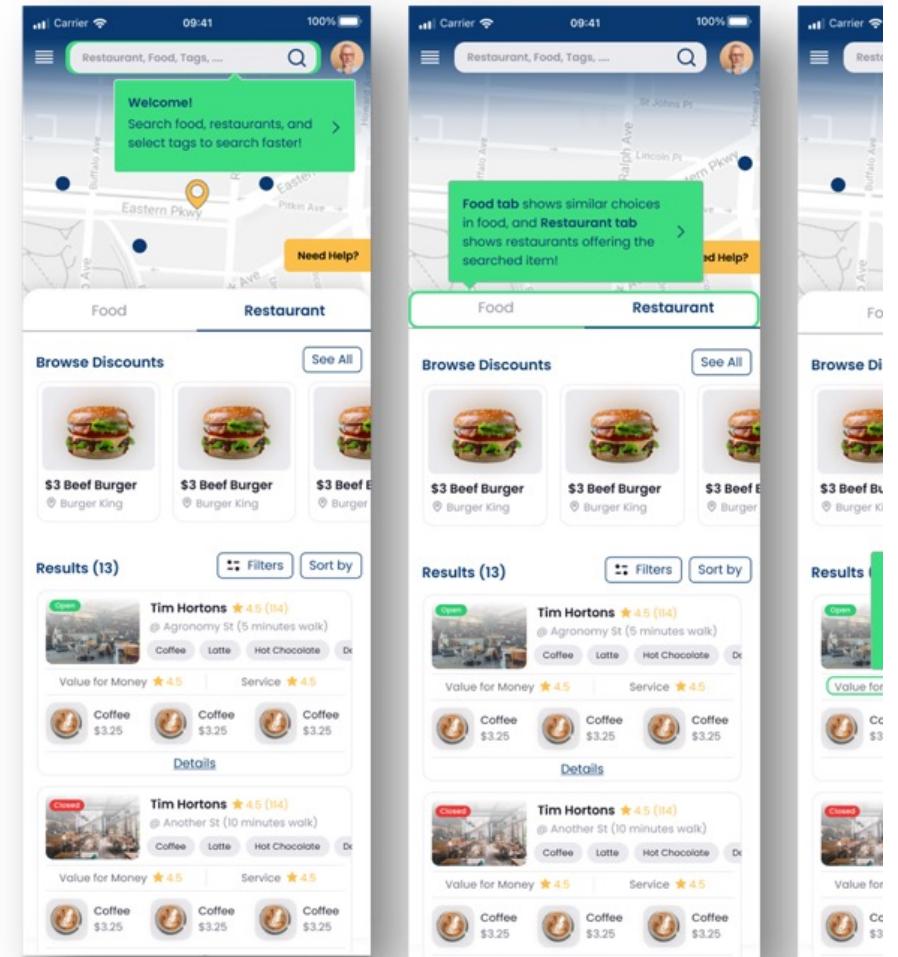
Objective:

A holistic application “**by students, for students**” to help them **find affordable and preferred food** from restaurants and cafes on UBC Vancouver campus to **tackle food insecurity and food-finding troubles**

Team (2022):

Ying Chen, Ishita Haque, Erfan Rezvanfar, Merry Shirvani
iSchool, CS, Mech

3. Walkthrough tutorial pages (After the login)



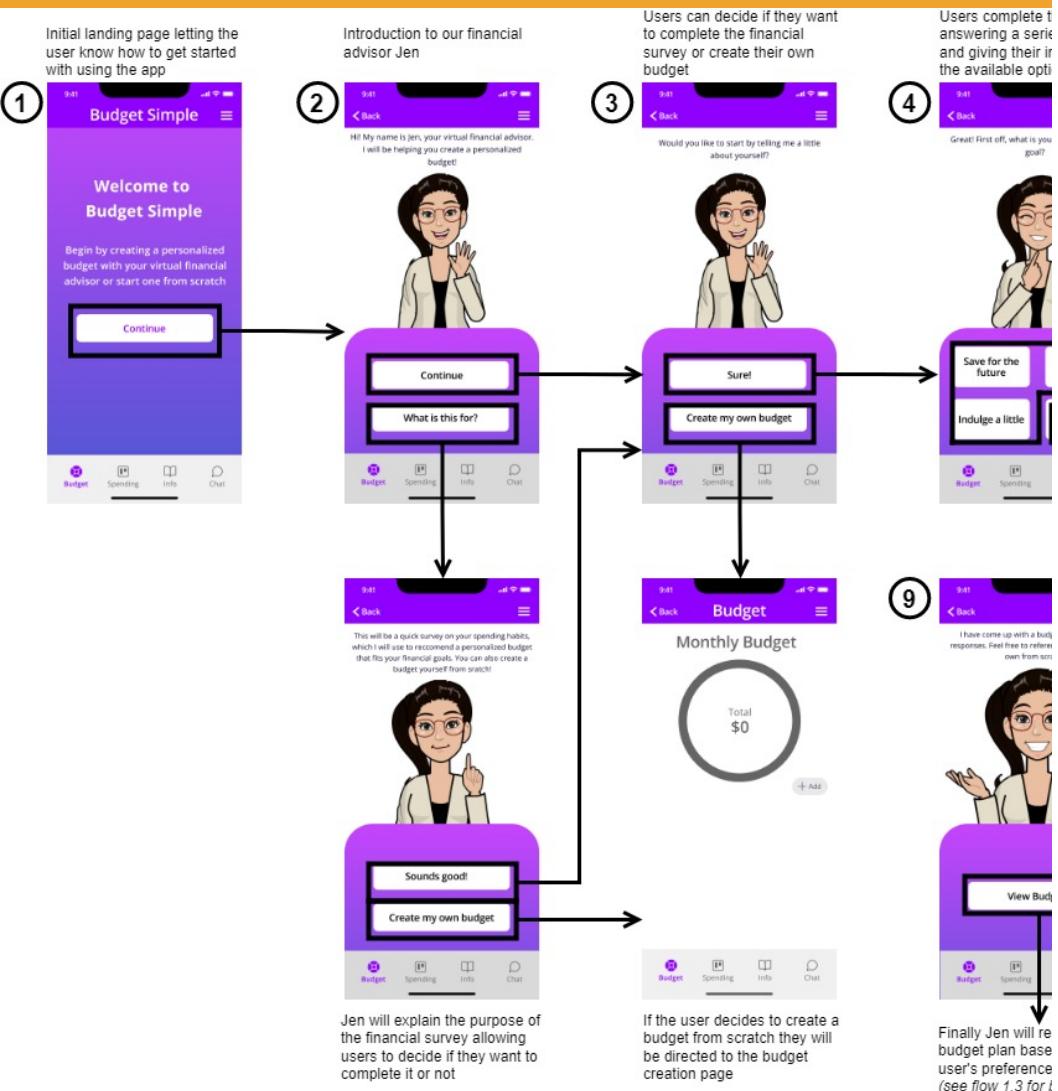
Broke No More

Objective:

A **financial virtual advisor** specifically targeting the **financial needs and knowledge levels** of student-aged and student-incomed individuals

Team (2022):

Pegah Derakhshan, Alice Li, Jackie Liu, Anna Zhu
Biomechanical Engineering, CS, iSchool



S



Objective:

Help grad students interested in **meeting and talking** about research with **people out of their own discipline**, by matching them based on their research and other interests.

Team (2022):

Bereket Guta, Jason Hall, Zhe Liu
Computer Science (different ugrad degrees)



Hi, Player April O'Neil



I'm Ghost, your card dealer for this silo-busting journey.

Welcome to the game!

In this game, you can create your own cards according to your Research expertise, Skills and Interests.

3 types of cards included for profile

Once you play any of your cards, I will match you with other players based on their cards.

Hope you enjoy this journey, and let me guide you to create your first card.

Start

click to continue
creating first card

First Pass on Concepts

Design Characteristics

Discoverability

- What can I do with this object or system? How do I do it?

Understanding

- What goals is this product or system meant to accomplish?
- What do the various controls, settings, etc. do?
 - Norman, p. 3 *The design of everyday things*

Fundamental Concepts (for example)

Affordances

- "A relationship between the properties of an object and the capabilities of the agent that determine just tell the object could possibly be used" (p. 11)
 - "a knob turns"

Signifiers

- "any mark or sound, any perceivable indicator that communicates appropriate behavior to a person" (p. 14)

Constraints

- Limit what actions can be performed

Mapping

- Relationship between elements of two sets of things

Feedback

- Communicate the results of an action

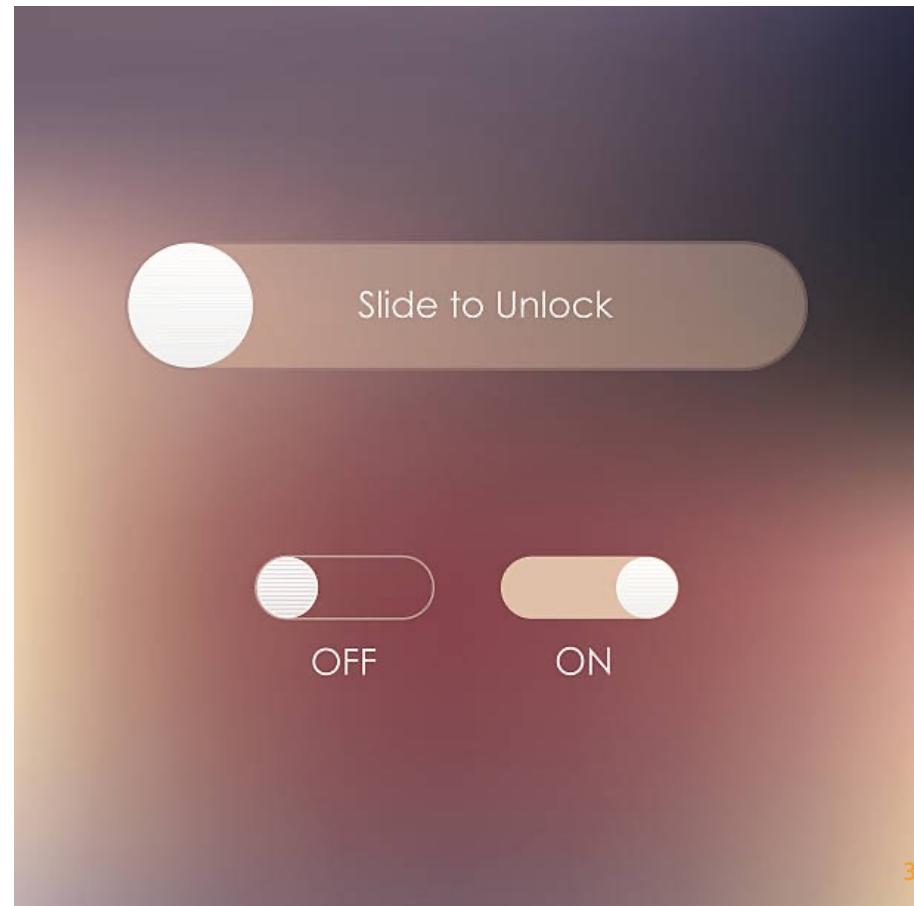
What to do?



Old or new, the challenges take different forms

Image source:

- 1] television: <https://www.dreamstime.com/photos-images/old-tv.html>
- 2] Slider: <https://www.istockphoto.com/photos/cell-phone-off>



Conceptual Model

An explanation, usually highly simplified, of how something works.

It doesn't have to be complete or even accurate **as long as it is useful.**

- Norman, p. 31 *The Design of Everyday Things*



Time to play a Game of.... Name that ThingamaGig



Instructions:

- Form groups of 3-4. We'll give your group a number.
- Go to this Google doc (also pasted on Slack #lectures):
 - <https://docs.google.com/presentation/d/17lc7UXnpmPWdu7eWwWaFZ7-SSMNFKosJwy0RQMxnc/edit?usp=sharing>
- You will see 8 slides. Focus on the slide with your group's number.
 - I.e., If you are in group #2, examine image/slide #2
- Discuss and answer the prompts on the slide.
- Annotate your responses **in the speaker notes**.
- You have 6 minutes. Go!!

Confused about the terminology? That's okay...

That's what the Readings are for! 1st set due Sunday 4pm:

- Norman, D. (2013). Design thinking. The design of everyday things: Revised and expanded edition. - Chs 1 and 6. Basic books.
- Tranum, Sarah. (2021). Designing a circular, regenerative food system. Trickle Up Design Podcast: <https://www.trickleupdesign.com/podcast/episode-1-designing-a-circular-regenerative-food-system>
- Project design scenarios (will be posted by Friday)
- Project material: skim all descriptions under Canvas/Assignments/Design Project

The plan for Monday

- Introduce design thinking and human-centered design
- Engage with the **project scenarios** and first step of **project team formation**

announcement for class members in DFP Program

(At this time, 8-9 students)

At the time of the present DFP Cohort's application, DFP believed that we would *not* be offering the Term 2 DFP Project course this year (final cohort).

However, two project sponsors have come forward with potentially interesting projects (#1 and #2 on the "[Project Topics](#)" list, linked from ISched).

Please think about whether you want and would be available to take the 3-unit DFP Project (554K) in term 2 after all (**participating in one of these two projects**) and discuss (or message me privately) on Slack.

Slack Channel: **#_dfp_students-discussion** (add yourself, anyone can join)

See you Monday! (no Thursday Lab until Week 2)

Your to-dos for Monday

Wk 2					
Sep 11	C2	Project scoping & team formation Intro to Design Thinking [slides]	R1	Norman, Donald A. <i>The Design of Everyday Things</i> . Basic Books, 01/01/2013. Web. 31 Aug. 2017. [link] or [download on Canvas-Researcher Journal #1 page] - Chapter 1. The psychopathology of everyday things - Chapter 6. Design Thinking Tranum, Sarah. (2021). Designing a circular, regenerative food system. Trickle Up Design [podcast]. Available, https://www.trickleupdesign.com/podcast/episode-1-designing-a-circular-regenerative-food-system Do before class C2:	(a) Researcher Journal R1 General instructions on Canvas; due 4pm Do before class C2: Do before class C2: Do after class C2:
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