

KAIST Spring 2025

# CS374: Intro to HCI

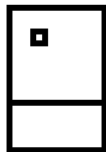
[hci.cstlab.org](http://hci.cstlab.org)

## **Class 01: Introduction & Course Overview**

2025.02.25

Joseph Seering

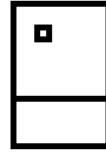
# MOST OF COMPUTER SCIENCE IS ABOUT MAKING COMPUTERS THAT ARE...



Fast  
Secure  
Intelligent  
Power-efficient  
Error-free  
Maintainable  
Cheap  
Small  
Reliable  
Standard-compliant  
Modular

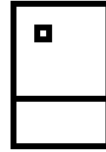
# HUMAN-COMPUTER INTERACTION IS ABOUT MAKING COMPUTERS THAT ARE...

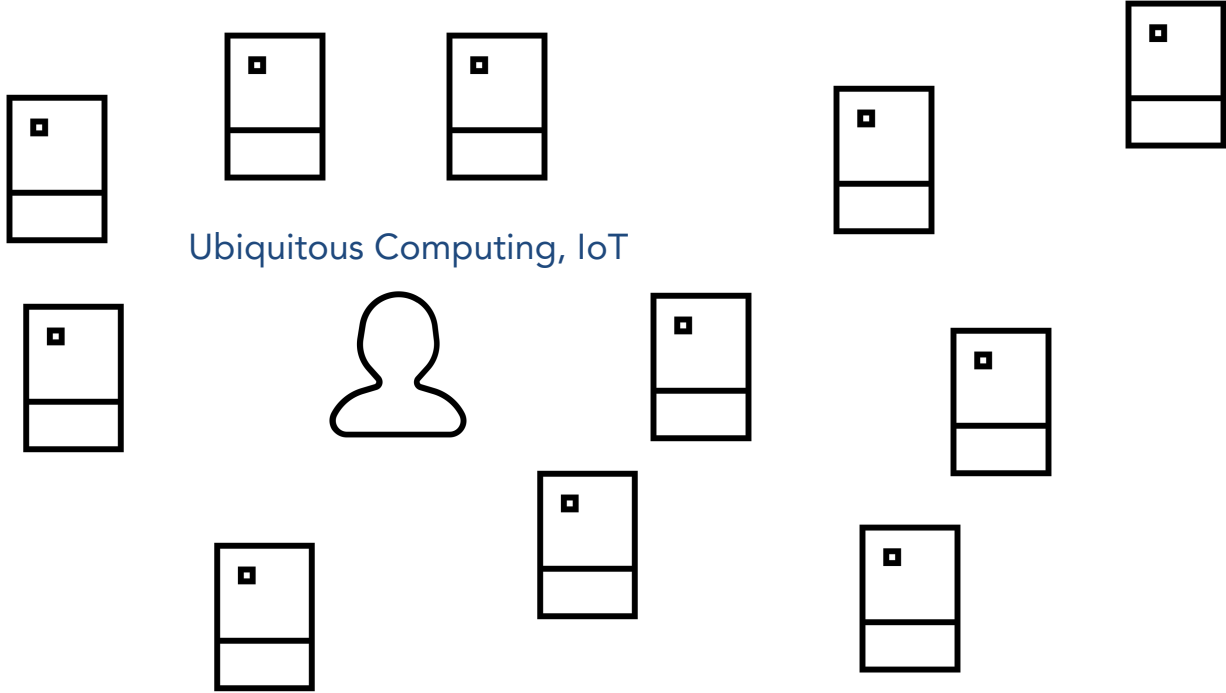
useful  
usable



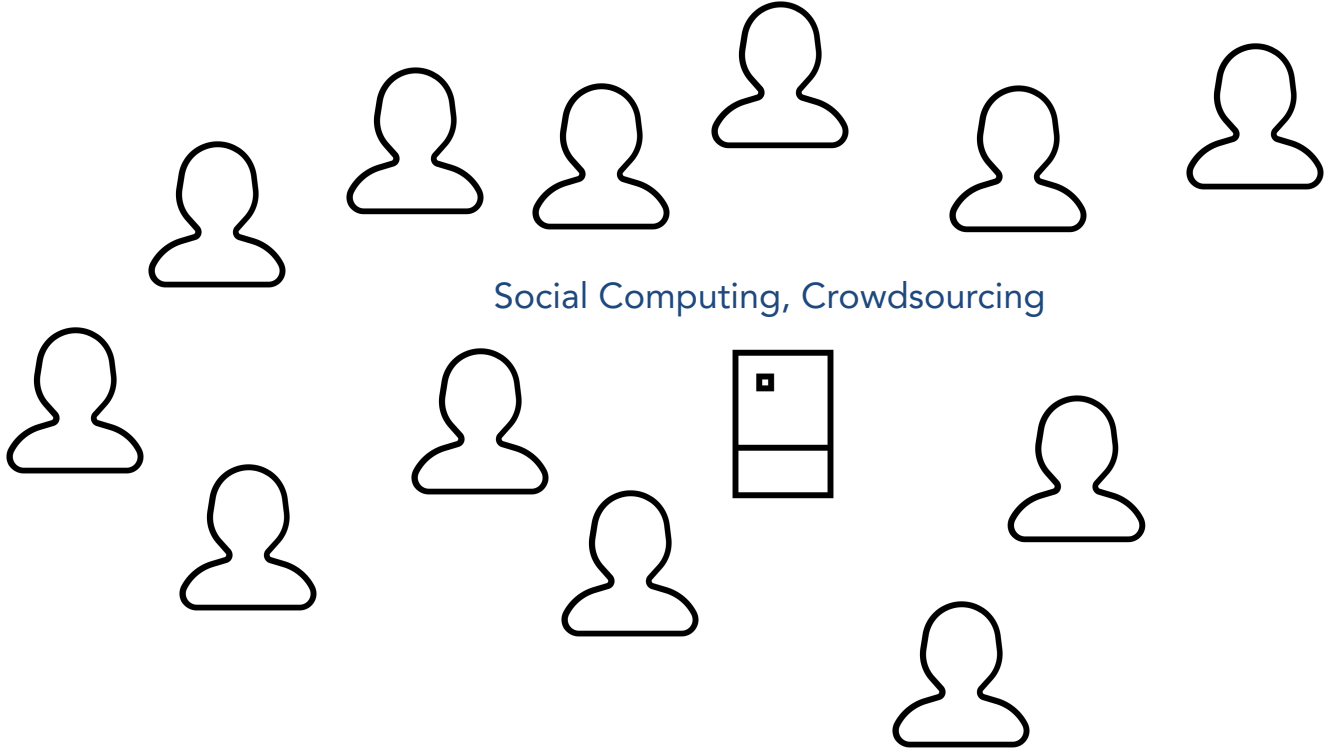
# HCI ACCOMPLISHES THE GOAL BY DESIGNING AND BUILDING BETTER...

interaction

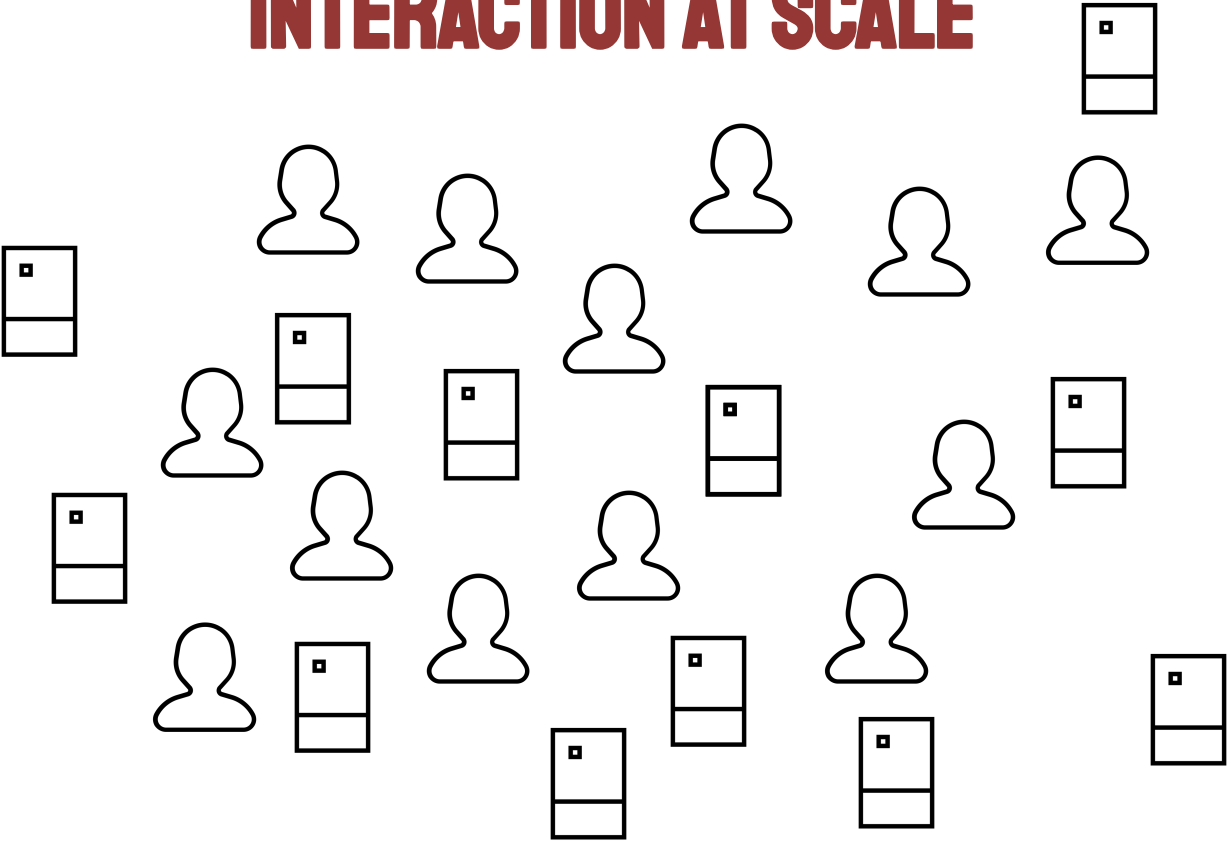




Ubiquitous Computing, IoT



# INTERACTION AT SCALE



# LEARNING OBJECTIVE

*“You’ll master the skills to design useful and usable interfaces that are carefully catered to users’ needs.”*



# WHAT YOU'LL LEARN IN CS374

- Design principles
- Design techniques
- Implementation techniques

# WHAT YOU'LL LEARN IN CS374

- Design principles
  - learnability, efficiency, safety, human capabilities, ...
- Design techniques
  - contextual inquiry, storyboarding, prototyping, user testing, ...
- Implementation techniques
  - GUI, HTML/JavaScript, output, input, layout, color, typography, ...



**The page at <https://runess.adp.com> says:**

Your password must be 8 to 20 characters and may include upper or lowercase letters (A-Z and a-z), numbers (0-9), spaces, and special characters. You must use at least one letter and one number. You cannot use the same character in four or more consecutive positions (for example, AAAa is valid, but AAAA is not valid) and you cannot use four or more sequential characters, in ascending or descending order, in a row (for example, ABCD and 4321 are not allowed).

OK

100%

0:01 / 1:43

⏸ ⏪ ⏩ ⚙ 📺 🖥 🗖

*“Users keep making stupid mistakes when using this simple feature.”*

*“I built this really cool thing.  
How come nobody uses it?”*

*Human Error?*  
*No, it's BAD DESIGN.*

# YOU'RE NOT THE USER.

- UI is about communicating with users.
  - Users are NOT LIKE YOU.
  
- The user is ALWAYS RIGHT.
  - Usability problems are the designer's fault.
  - BUT: The user is NOT a designer.

# USABILITY

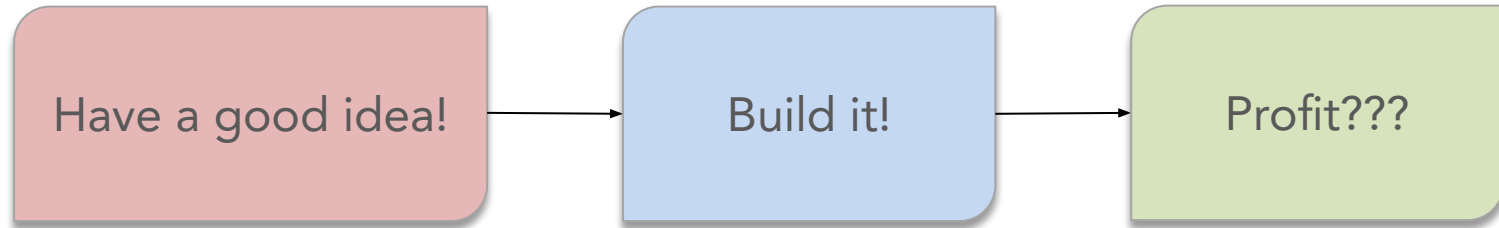
How well users can  
use the system's functionality

# WHAT YOU'LL LEARN IN CS374

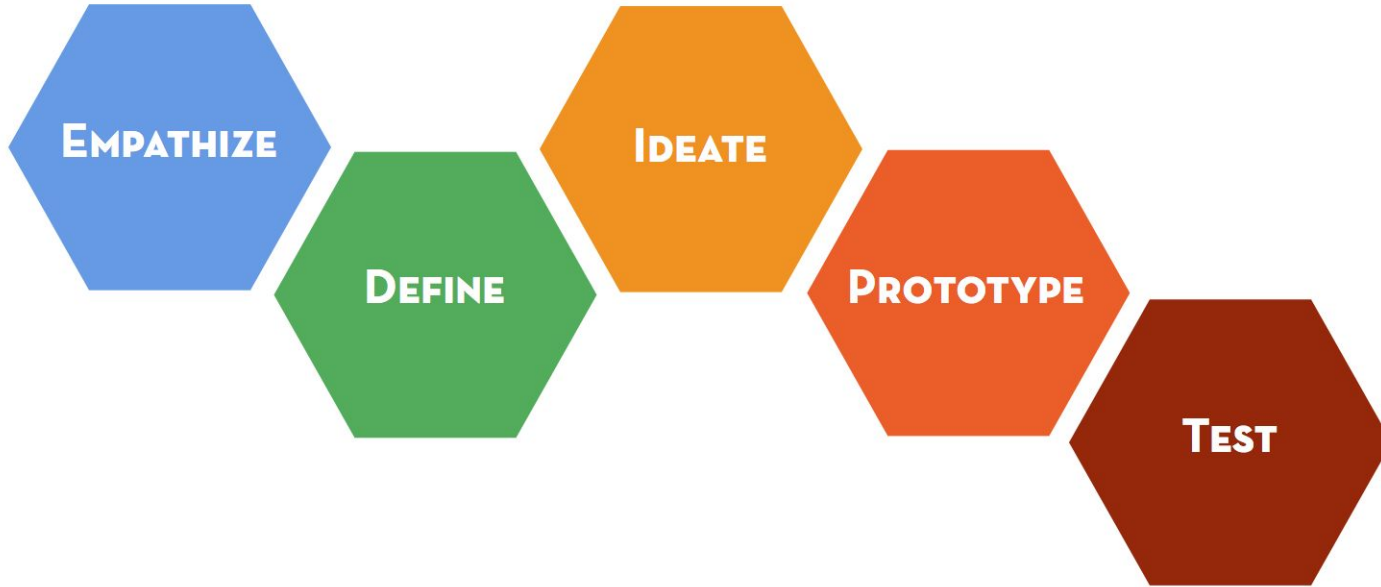
- Design principles
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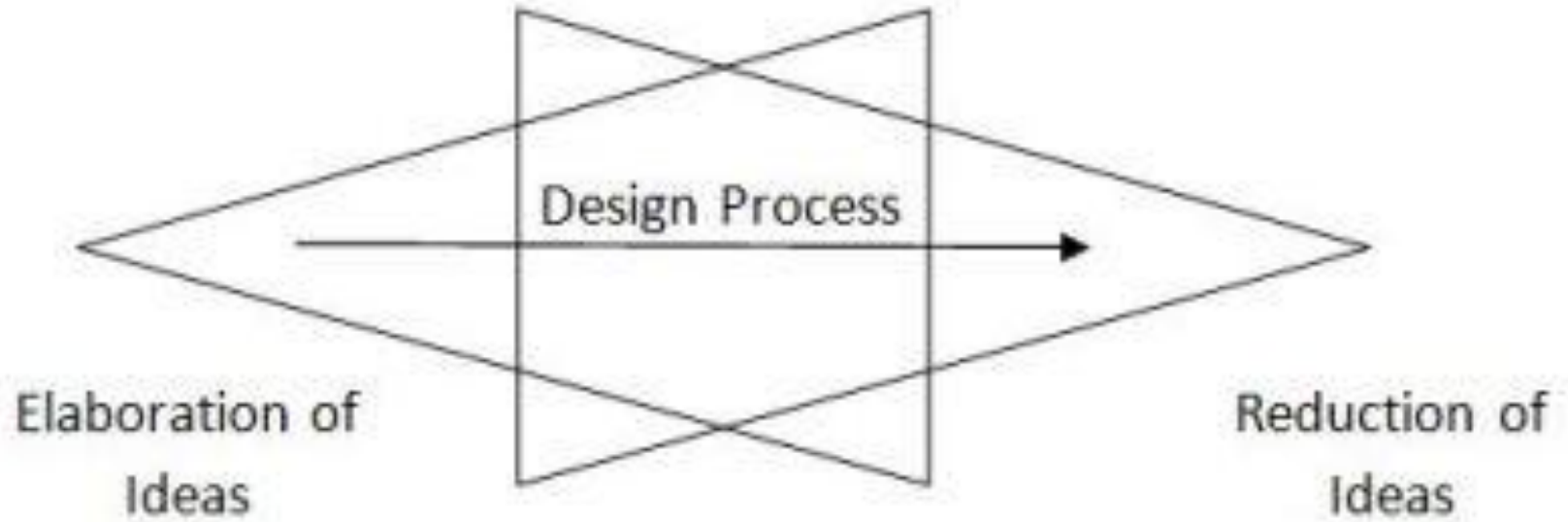
# USER-CENTERED DESIGN PROCESS



# USER-CENTERED DESIGN PROCESS



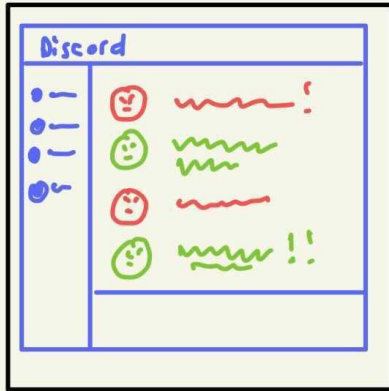
## Laseau's Funnel



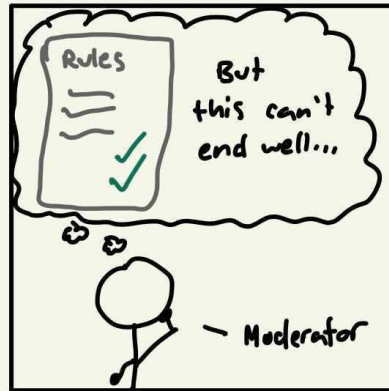
# NEEDFINDING



# STORYBOARDING



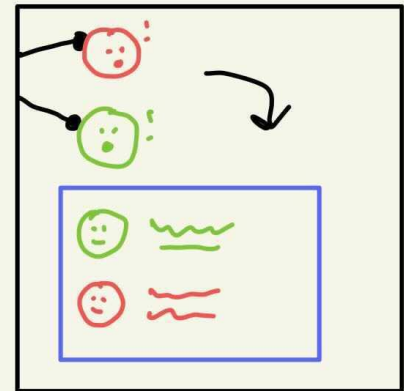
Two people are having a heated conversation



They haven't broken any rules but you're worried it will escalate to that point



You don't want to be a controlling mod or you don't think this needs direct confrontation



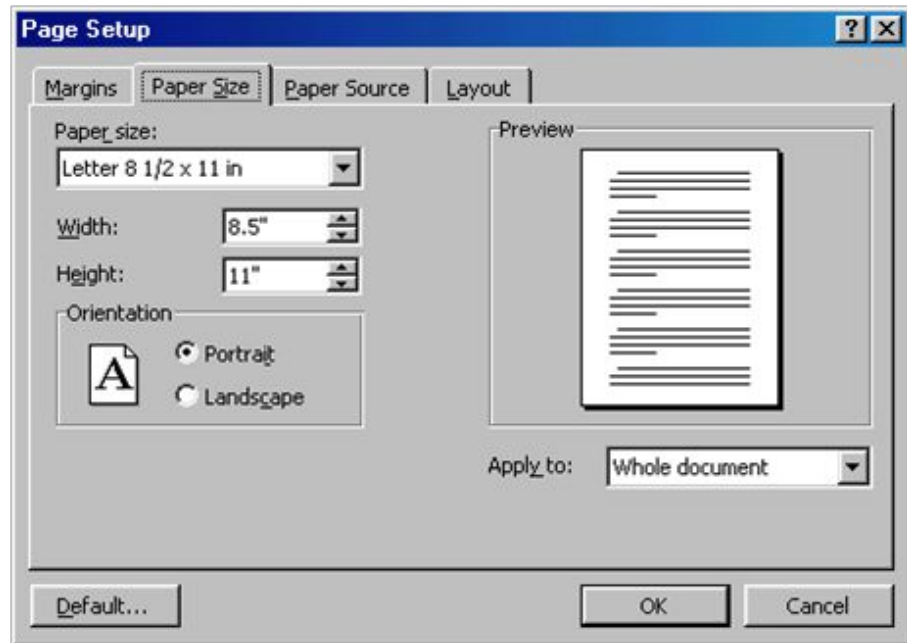
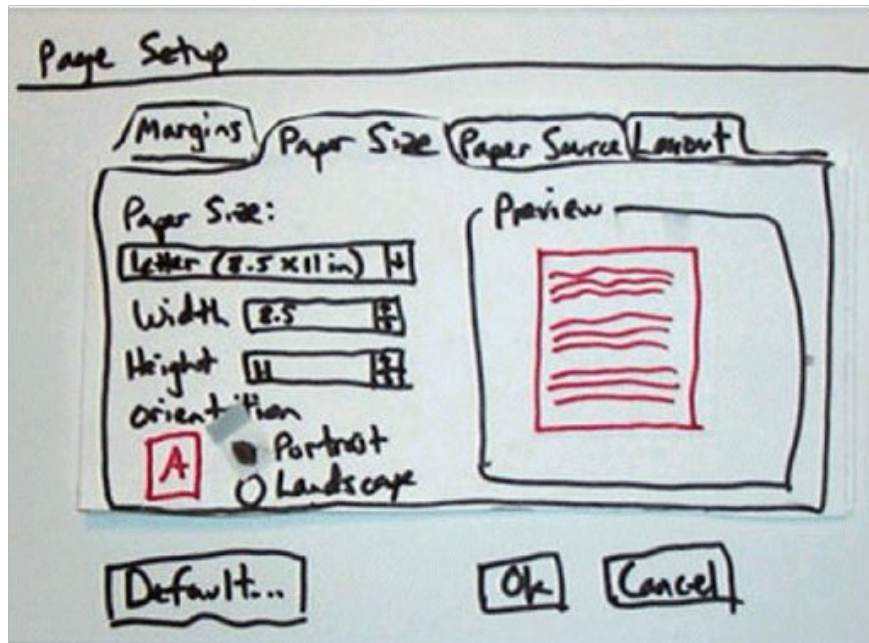
Give them an anonymous private "nudge" letting them know that they should calm down

# PROTOTYPE

*“A representation of a design,  
made before the final solution exists.”*






*Moggridge, Designing Interactions*



# PAPER PROTOTYPING





# KIMCHI FRIED RICE

Ingredients       
KIMCHI RICE TUNA EGG OIL  
100g 9g 9g 9g Little

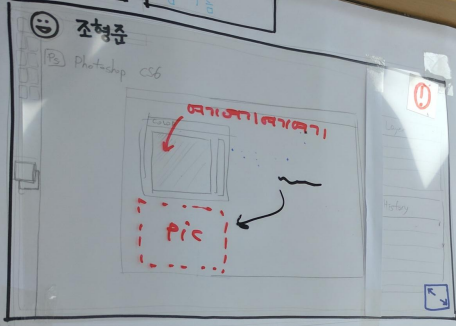
Tools    
PAN SPATULA  
1 can 3 eggs

For  people

- ⊕ Additional
- cheese
  - pepper
  - bulgogi

서비스 이름

팀 이름

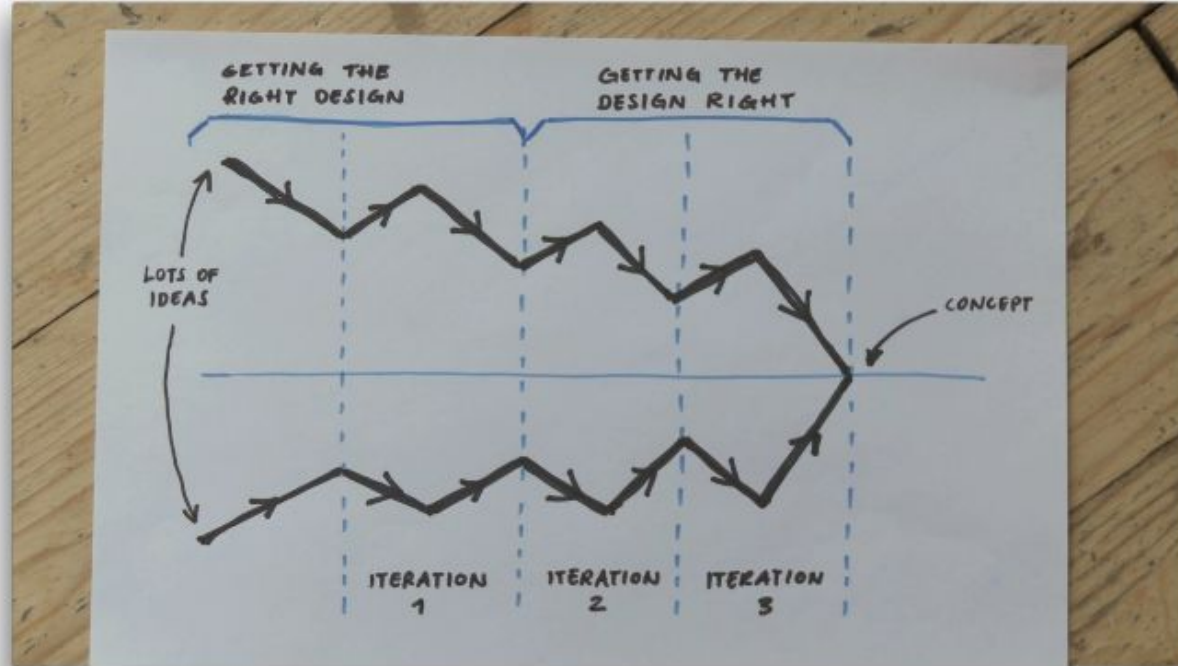


CHAT

SEND



# LOW -> HI-FIDELITY PROTOTYPING



# >\_What The Shell

1. copy hello to bbb
2. remove hello
3. create new
4. move trash to home

Test Command

home

bbb

bbb

trash.txt

Hi.c

home



hello.txt



bbb



```
class _____ @
ls _____ @
cp hello trash.txt _____ @
ls _____ @
cd /tmp _____ @
ls _____ @
mv bbb Hi.c _____ @
```

rm is a removing command.

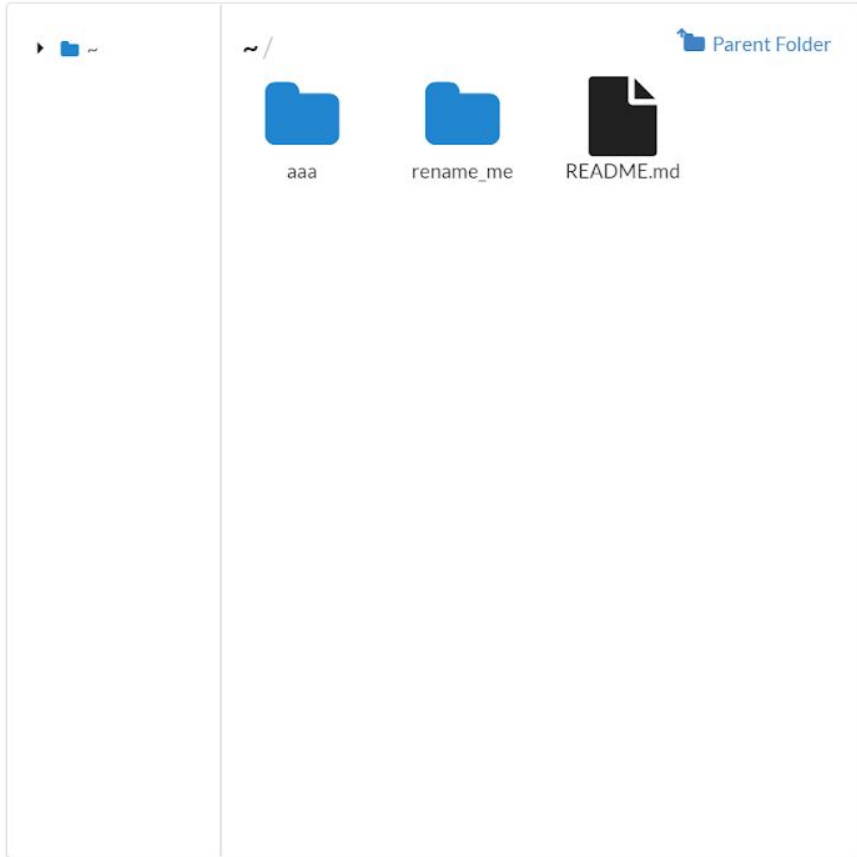
~~rm~~  
including -r will remove a folder ~~and~~ and every content in it.

home	home
aaa	 aaa
README.md	 README.md



cd aaa	?
cd ..	?

**First try**



Clear History

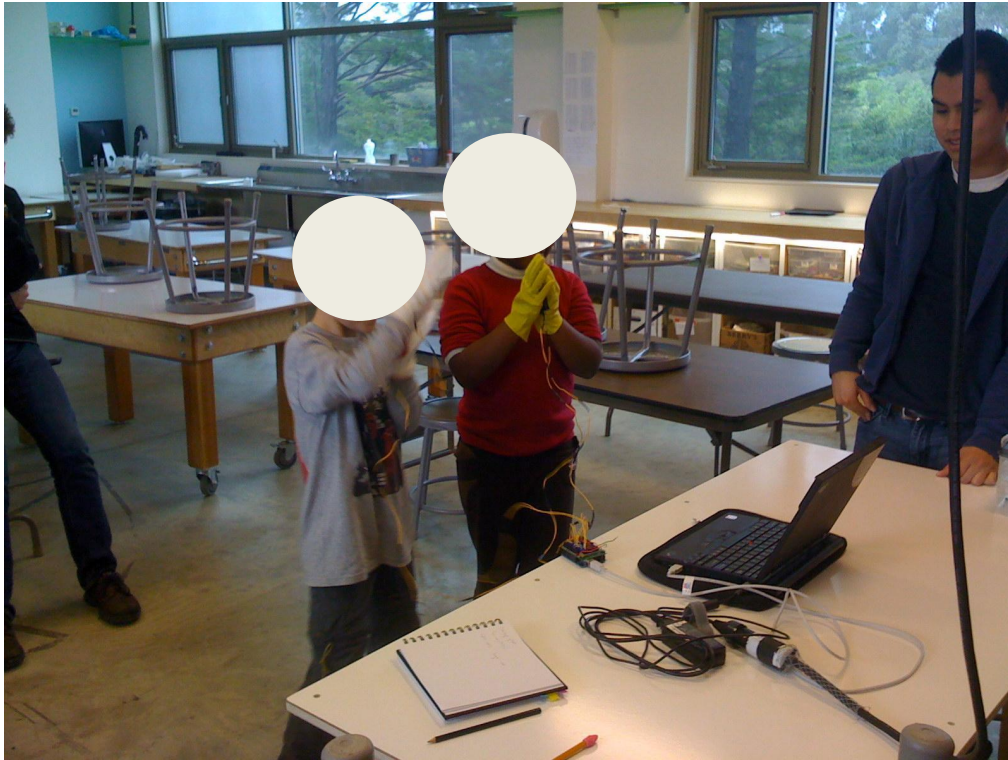
```
$ cp -r rename_me aaa ?  
$ cd aaa ?  
$ cd ~ ?
```

**Error** aaa is a directory

**Try this** rm -r aaa

```
rm aaa
```

# USER TESTING



# DESIGN STUDIO





# DESIGN STUDIO

The screenshot shows a web browser with three tabs: 'DP: 4: Hi-fi Prototyping 2020 - G...', 'Superfood', and 'Kabdo's Studio - Feedback - Go...'. The address bar shows 'thecamilo.github.io/superfood/'. The browser's bookmark bar contains 'Apps', 'Introduction - GitBo...', 'How Disney Makes...', 'Superfood', 'Courses Offered', and 'Superfood - Fireba...'. The main content area features a user profile for 'SUPERFOOD' with details: 'Ern Khor', 'Height: 1.8m', and 'Weight: 80kg'. There are 'Edit Profile' and 'Log out' buttons. Below this is a 'Nutrients Taken' section with tabs for 'Today', 'This Week', and 'This Month'. It displays progress bars for Sodium (72.7%), Protein (94.0%), and Fat (27.5%), with a note: '% Daily Values based on your daily nutrient needs'. The meal plan for '09 Jun' includes 'Previous day', 'Today', and 'Next day' sections. The 'Today' section lists 'Breakfast: Pasta with Broccoli and Tomato' with ingredients and nutrients, and a button 'I want something new!'. Below that is 'Lunch: Tossed Salad' with ingredients and nutrients, and another 'I want something new!' button. The 'Dinner' section shows 'Healthy Twice-Baked Potatoes'.

DP: 4: Hi-fi Prototyping 2020 - G... x Superfood x Kabdo's Studio - Feedback - Go... x | +

thecamilo.github.io/superfood/

Apps Introduction - GitBo... How Disney Makes... Superfood Courses Offered Superfood - Fireba...

**SUPERFOOD**

Ern Khor  
Height: 1.8m  
Weight: 80kg

Edit Profile Log out

**Nutrients Taken**

Today This Week This Month

Sodium 72.7%  
Protein 94.0%  
Fat 27.5%

% Daily Values based on your daily nutrient needs

**09 Jun**

Previous day Today Next day

**Breakfast**  
**Pasta with Broccoli and Tomato**  
Ingredients: Pasta, Pasta water, Garlic cloves, Extra virgin olive oil, Pesto, Grape tomatoes, Broccoli florets, Sun dried tomatoes, Parmesan cheese, Salt, Red pepper flakes, Pepper.  
Nutrients: Protein: 10.9g, Sodium: 425.9mg, Fats: 10.8g

I want something new!

**Lunch**  
**Tossed Salad**  
Ingredients: Lime juice, Distilled white vinegar, Ground cumin, Salt, Diced cucumber, Diced tomatoes, Chopped fresh parsley, Diced green bell pepper, Diced radishes, Diced yellow onion.  
Nutrients: Protein: 1.7g, Sodium: 162mg, Fats: 0.5g

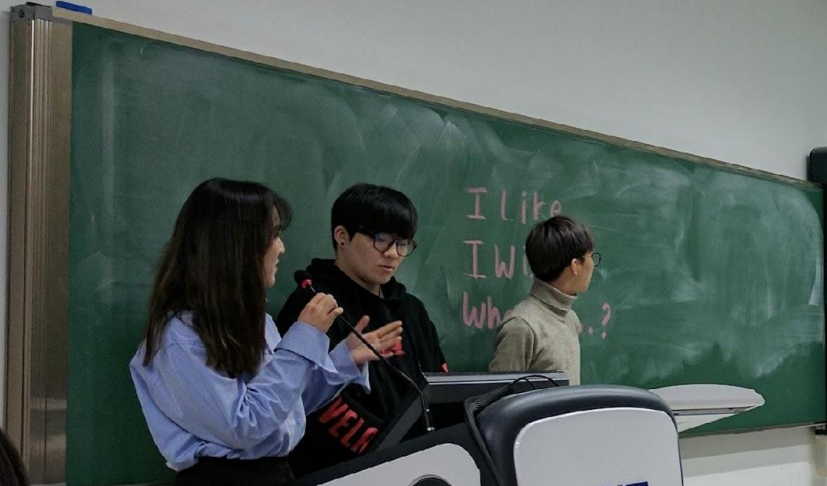
I want something new!

**Dinner**  
**Healthy Twice-Baked Potatoes**

# FINAL PRESENTATIONS








DP1: NEEDING  
OUR INSIGHTS

- Self-boarding house's kitchen is not fit to cook.  
- narrow, poor at ventilation
- Self-boarders have only few cookware.
- Too many processes for cleaning up.  
- throwing trashes away, washing dishes
- Not much chances to eat at home.





NEEDS

POV

HMW

## User Needs & Problems

From DP1,

- Interviewee C
- Early 30s married man
- Living in the United States of America.
- He cooks breakfast every day together with his wife.
- He wants to cook together with his wife efficiently.

### Presentation Order

- |              |        |          |                  |
|--------------|--------|----------|------------------|
| 1. What Time | 6. ... | 11. K2T2 | 16. later. RUS   |
| 2. ...       | 7. ... | 12. ...  | 17. KAIST ...    |
| 3. ...       | 8. ... | 13. ...  | 18. Pater. Bader |
| 4. ...       | 9. ... | 14. ...  | 19. Oldboy       |

Creativity & Challenge

KAIST

# WHAT YOU'LL LEARN IN CS374

- Design principles
  - learnability, efficiency, safety, human capabilities, ...
- Design techniques
  - contextual inquiry, storyboarding, prototyping, user testing, ...
- Implementation techniques
  - GUI, HTML/JavaScript, output, input, layout, color, typography, ...



# HOW DO USER INTERFACES WORK?

- HTML/CSS/JavaScript
  - No prior knowledge is required.
- How do modern UIs work?
  - Handling input, output, data, interactivity, etc.
- Other implementation topics
  - Layout, color, typography, accessibility, etc.

What is HCl?

Computer  
system

Interaction  
interface

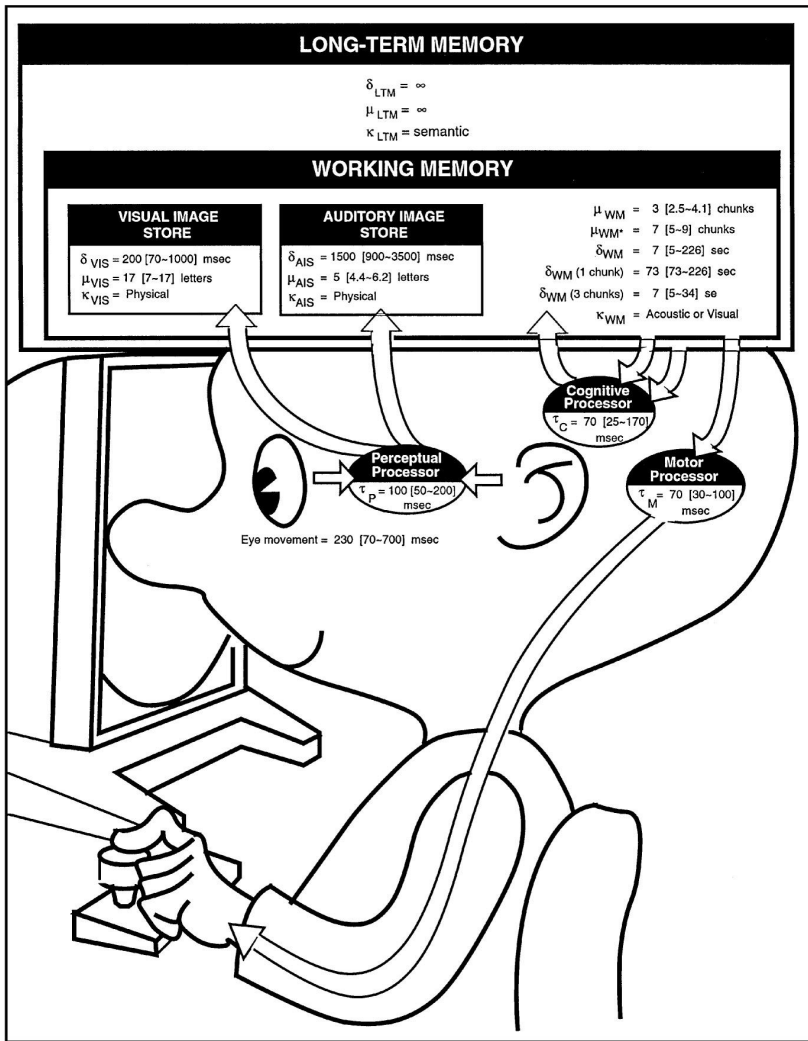
Human  
user



# XEROX STAR (1981)

- bitmapped display
- window-based graphical user interface
- icons
- folders
- mouse (two-button)
- Ethernet networking
- file servers
- print servers
- e-mail





- Model-driven
- Human factors
- Cognitive science
- Systematic testing
- Formal methods
- Experimental studies

MHP (Model Human Processor)  
Card, Moran, Newell, 1983.

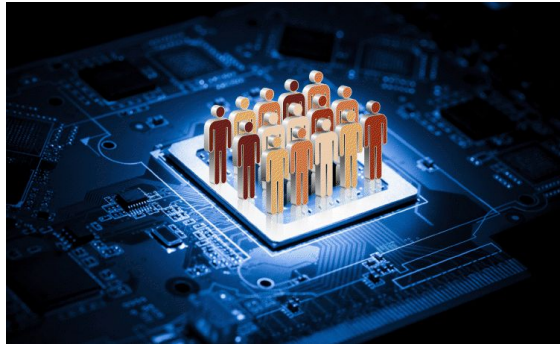




- Groupware
- Work-focused
- Collaboration
- Efficient communication
- Productivity tools
- CSCW



- Diverse usage contexts
- Beyond work
- Less purposeful
- Mobile, Ubicomp
- Data-driven
- Mass collaboration
- Crowdsourcing
- Tangible/Physical UIs
- Voice/Gesture UIs
- Intelligent UIs
- AR/VR
- Human-AI Interaction



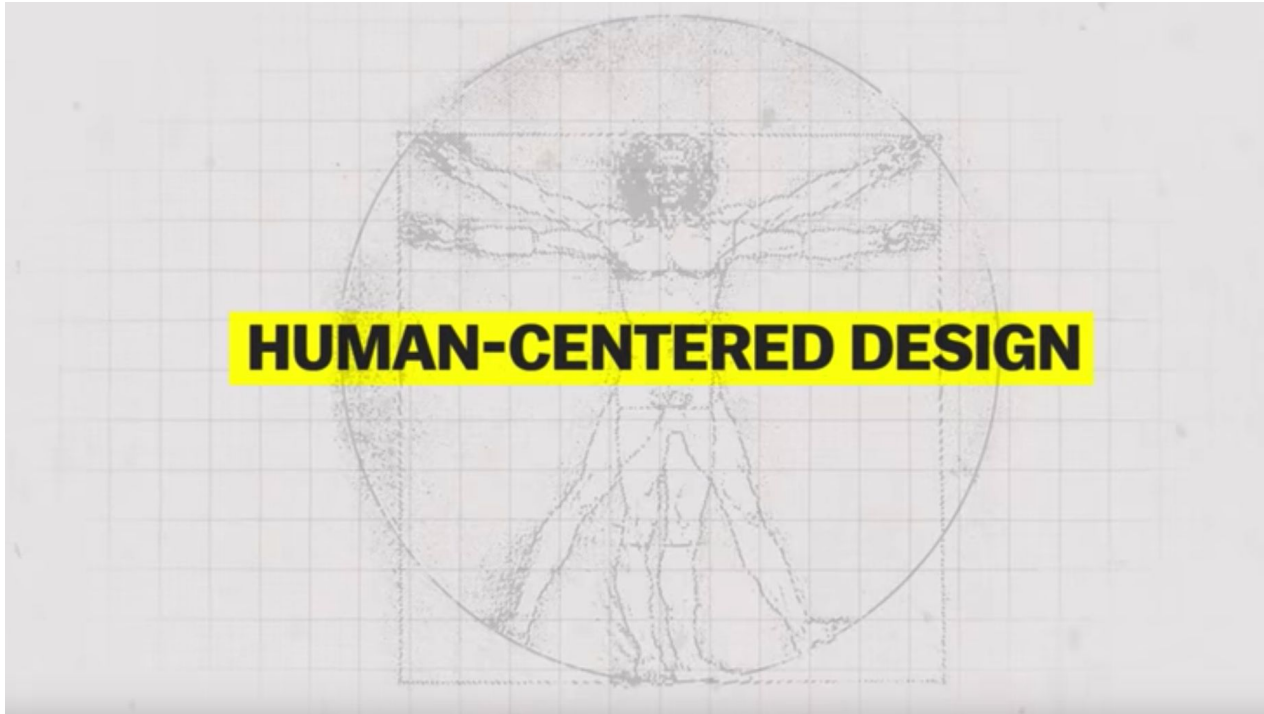
# WHAT DO THESE PEOPLE HAVE IN COMMON?



HCI background!

Video Break

**IT'S NOT YOU. BAD DOORS ARE EVERYWHERE.**



# Course Overview

# WHO AM I? PROFESSOR JOSEPH SEERING

- Assistant Professor, KAIST
- Postdoc, Stanford University
- Ph.D., Carnegie Mellon University
- M.S., Carnegie Mellon University
- B.A., Harvard University
- Trust and Safety Consultant

- [cstlab.org](http://cstlab.org)
- [joseph.seering.org](http://joseph.seering.org)

- Research Interests: HCI, Social Computing, "Trust & Safety"





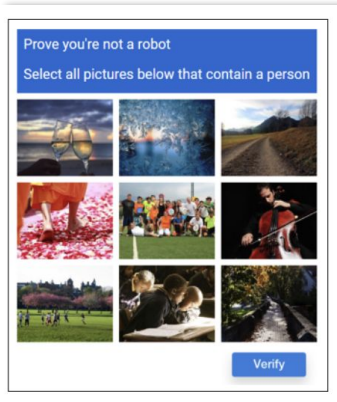


COLLABORATIVE  
SOCIAL TECHNOLOGIES LAB.

*How can we make a social internet that's safer and more trustworthy?*

- Can we detect or predict social problems more effectively?
- Can we give users better tools to handle social problems?
- Can we rethink the social media experience to focus on increasing potential benefits rather than reducing harms?





Designing user interface elements for improving commenting behavior

pete\_bot\_: @ P2 what's the world like outside of Twitch? 🌧️ 🌧️

P2 Its a cold dark place @pete\_bot\_

pete\_bot\_: can hit so o(>ω<)o

P8 @pete\_bot\_ don't hit things!

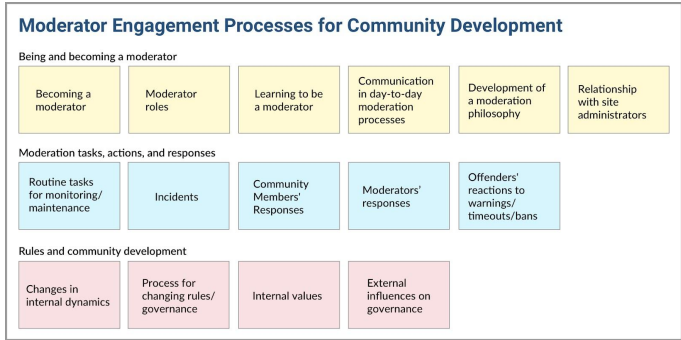
pete\_bot\_: @ P8 don't hit things!?

P10 @pete\_bot\_ Bad pete

pete\_bot\_: @ P10 °° ( ° ^∇^ ) °°

P11 @pete\_bot\_ bad bot, no hit so σ\_σ

Conversational agents for community development on Twitch



User research on community moderation processes



Socially aware moderation bots For Discord communities



Juhoon Lee



Heechan Lee

**AMAZING TAS**

# LEARNING OBJECTIVE

*“You’ll master the skills to design useful and usable interfaces that are carefully catered to users’ needs.”*

MINIMAL LECTURE  
NO EXAM

# IN THIS COURSE, YOU WILL

- DESIGN, BUILD, COLLABORATE
  - Design Project (DP) Milestones
- LISTEN, CRITIQUE
  - TA-led Studio Sessions
- ANALYZE, IMPLEMENT, TEST
  - Homework and Assignments
- EXPERIENCE, PRACTICE
  - In-class Activities: every class
- READ, WATCH
  - Pre-class Material: every class

# PROJECT-BASED LEARNING

- You will go through a design process of
  - Needfinding → Ideation → Prototyping → TestingTHREE times this semester with your own design ideas.
- First time: in one hour (this Thursday) → Workshop
- Second time: in two weeks (week 2-3) → Mini Project
- Third time: in eleven weeks (week 5-15) → Design Project

## MINI PROJECT (W2-3)

- You'll work in a team of 4, randomly assigned.
- Topic: Improving remote classroom experience
- No actual implementation is needed.
- A lot of work will be done during class.
- One presentation & short report at the end
- 10% of your total grade

# DESIGN PROJECT (W5-15)

- You'll work in a team of 4, with teammates of your choice.
- Topic of your choice, discuss with course staff.
- "Stretch": you're not the target user
- Scope: Figma prototype
  - No actual implementation
- 50% of your total grade



# DESIGN PROJECT MILESTONES

- Each milestone from DP1 has a studio session
- [DP0] Week 05: Team Formation
- [DP1] Week 06: Needfinding
- [DP2] Week 07: Ideation
- [DP3] Week 9: Prototyping Round 1
- [DP4] Week 12: Prototyping Round 2 + Heuristic Evaluation
- [DP5] Week 14: Prototyping Round 3 + Usability Testing
- [DP6] Week 15: Project Showcase

# DESIGN STUDIO

- Led by TAs
  - *All happening in-class*
- Each team will present for 10 mins & classmates will offer feedback.
- Your team will be randomly assigned a TA mentor.

# ASSIGNMENTS

- Individual work
- Light web programming assignments to practice concepts covered in class
- Web programming tutorials will be provided

# PARTICIPATION

- In-class
  - Please comment or speak!
  - Contribute your own (incomplete, half-baked) perspective.
- Before/After class
  - Share cool examples, ask and answer questions in Campuswire.
  - Annotate pre-class reading materials on Google docs.

# PARTICIPATION MATTERS

- It's a course in which participation actually matters.
- We track your in-class activity, Campuswire, Google docs, and studio participation.

# NANOQUIZ

- Simple questions about the pre-class material
- Closed book, closed notes
- 3 minutes

Nanoquiz URL will be here.

1. What is the course number for Intro to HCI?

(choose one best answer)

A. CS3744

B. CS374

C. CS37

D. CS3

2. Who is the instructor for this course? (choose all good answers)

A. Joseph Seering

B. Don Norman

C. Eunyoung Ko

D. Larry Page

3. How long is a nanoquiz? (choose one best answer)

A. 1 hour

B. 3 minutes

C. 30 seconds

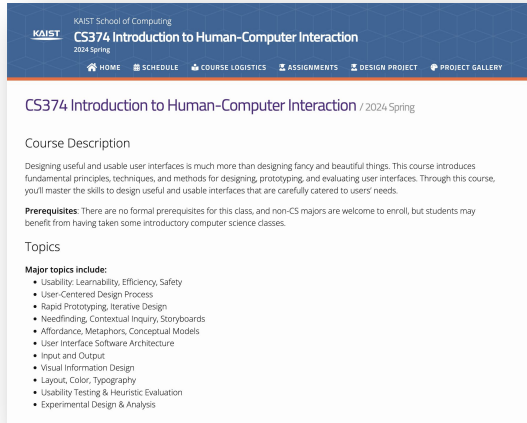
# GRADING

- Design Project: 50%
  - Mini Project: 10%
  - Assignments: 20%
  - Nanoquizzes: 10%
  - Class & studio participation: 10%
- 
- Grading design artifacts and teamwork is inherently subjective. You'll be rewarded on carefully following the process: survive through the semester & you'll be fine.



# COURSE INFRASTRUCTURE

- Website: calendar, assignments, readings
- Campuswire: announcements, discussion, examples, Q&A
- Google Docs: reading materials



KAIST School of Computing  
KAIST CS374 Introduction to Human-Computer Interaction  
2024 Spring

HOME SCHEDULE COURSE LOGISTICS ASSIGNMENTS DESIGN PROJECT PROJECT GALLERY

## CS374 Introduction to Human-Computer Interaction / 2024 Spring

### Course Description

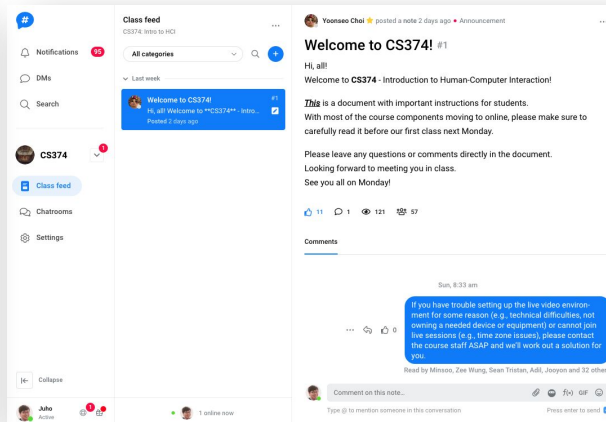
Designing useful and usable user interfaces is much more than designing fancy and beautiful things. This course introduces fundamental principles, techniques, and methods for designing, prototyping, and evaluating user interfaces. Through this course, you'll master the skills to design useful and usable interfaces that are carefully catered to users' needs.

**Prerequisites:** There are no formal prerequisites for this class, and non-CS majors are welcome to enroll, but students may benefit from having taken some introductory computer science classes.

### Topics

**Major topics include:**

- Usability: Learnability, Efficiency, Safety
- User-Centered Design Process
- Rapid Prototyping, Iterative Design
- Needfinding, Contextual Inquiry, Storyboards
- Affordance, Metaphors, Conceptual Models
- User Interface Software Architecture
- Input and Output
- Visual Information Design
- Layout, Color, Typography
- Usability Testing & Heuristic Evaluation
- Experimental Design & Analysis



**Class feed**  
CS374: Intro to HCI

All categories

Last week

Welcome to CS374!  
Hi, all! Welcome to "CS374"! Please check the class feed.

**Welcome to CS374!** #1

Hi, all!  
Welcome to **CS374 - Introduction to Human-Computer Interaction!**  
**This** is a document with important instructions for students. With most of the course components moving to online, please make sure to carefully read it before our first class next Monday.  
Please leave any questions or comments directly in the document. Looking forward to meeting you in class.  
See you all on Monday!

11 1 121 57

Comments

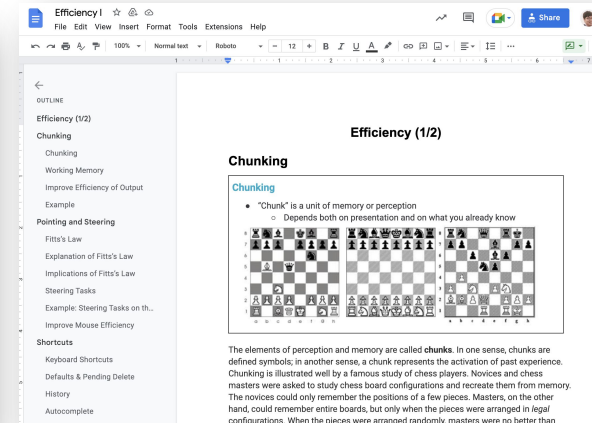
Sun, 6:33 am

If you have trouble setting up the live video environment for some reason (e.g., internet difficulties, not owning a needed device or equipment) or cannot join live sessions (e.g., time zone issues), please contact the course staff ASAP and we'll work out a solution for you.

Read by Minsoo, Zee Wang, Sean Tristram, Aali, Jooyeon and 32 others

Comment on this note.

Type @ to mention someone in this conversation. Press enter to send.



Efficiency (1/2)

File Edit View Insert Format Tools Extensions Help

100% Normal text Rubato


## Efficiency (1/2)

### Chunking

Chunking  
Working Memory  
Improve Efficiency of Output  
Example  
Pointing and Steering  
Fitts's Law  
Explanation of Fitts's Law  
Implications of Fitts's Law  
Steering Tasks  
Example: Steering Tasks on th...  
Improve Mouse Efficiency

#### Chunking

- "Chunk" is a unit of memory or perception
  - Depends both on presentation and on what you already know



The elements of perception and memory are called **chunks**. In one sense, chunks are defined symbols; in another sense, a chunk represents the activation of past experience. Chunking is illustrated well by a famous study of chess players. Novices and chess masters were asked to study chess board configurations and recreate them from memory. The novices could only remember the positions of a few pieces. Masters, on the other hand, could remember entire boards, but only when the pieces were arranged in legal configurations. When the pieces were arranged randomly, masters were no better than

# ZOOM RULES

- Turn off audio (mute) & turn on video whenever possible.
- Find a quiet place (avoid crowded places like a café).
- Use headphones or earphones.
- Use the Zoom desktop app.
- Emergency communication: chat  Campuswire  email
- Use the chat actively! We're monitoring.

# ZOOM BREAKOUT ROOMS

- Used for group discussion and activity.
- You will be randomly partnered with classmates.
- Course staff will be lurking in the breakout rooms, so don't be surprised!

# OFFICE HOURS

- Please come to OH to discuss any course-related matters
- Prof. Joseph Seering
  - By appointment. Email in advance.
- TA office hours
  - 8pm Mondays (Walk-ins okay, but better if you email in advance)
  - Contact your studio TA for additional slots.

# TAKEAWAYS FROM TODAY

- This course is about user-centered computing, and principles, techniques, & methods for realizing it.
- I want you to succeed and learn.
  - It's not really about evaluating where you are at the end of the course.
  - But you have to do your part: active learning.
  - You have to speak up, otherwise you won't learn.

# TODO ITEMS FOR YOU

- Contact course staff if you couldn't access the "Student Instructions" document.
- Course sign-up form NOW
  - You're not officially registered unless you fill this out. Due 3/3 (Mon).
- Visit the course website
  - [hci.cstlab.org](http://hci.cstlab.org)
  - Course updates and materials
- Sign up for course Campuswire
  - All announcements, Q&A, & discussions

**Nvidia CEO predicts the death of coding —  
Jensen Huang says AI will do the work, so  
kids don't need to learn**



# UPCOMING

- 2/27 (Thu)
  - Design Thinking Workshop
  - No prep necessary
  
- 3/4 (Tue)
  - Needfinding #1
  - Do pre-class reading