

KAIST Spring 2025

# CS374: Intro to HCI

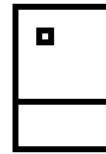
[hci.cstlab.org](http://hci.cstlab.org)

## Class 01: Introduction & Course Overview

2025.02.25

Joseph Seering

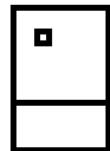
# MOST OF COMPUTER SCIENCE IS ABOUT MAKING COMPUTERS THAT ARE...



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

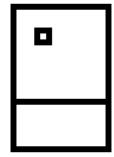
# HUMAN-COMPUTER INTERACTION IS ABOUT MAKING COMPUTERS THAT ARE...

useful  
usable

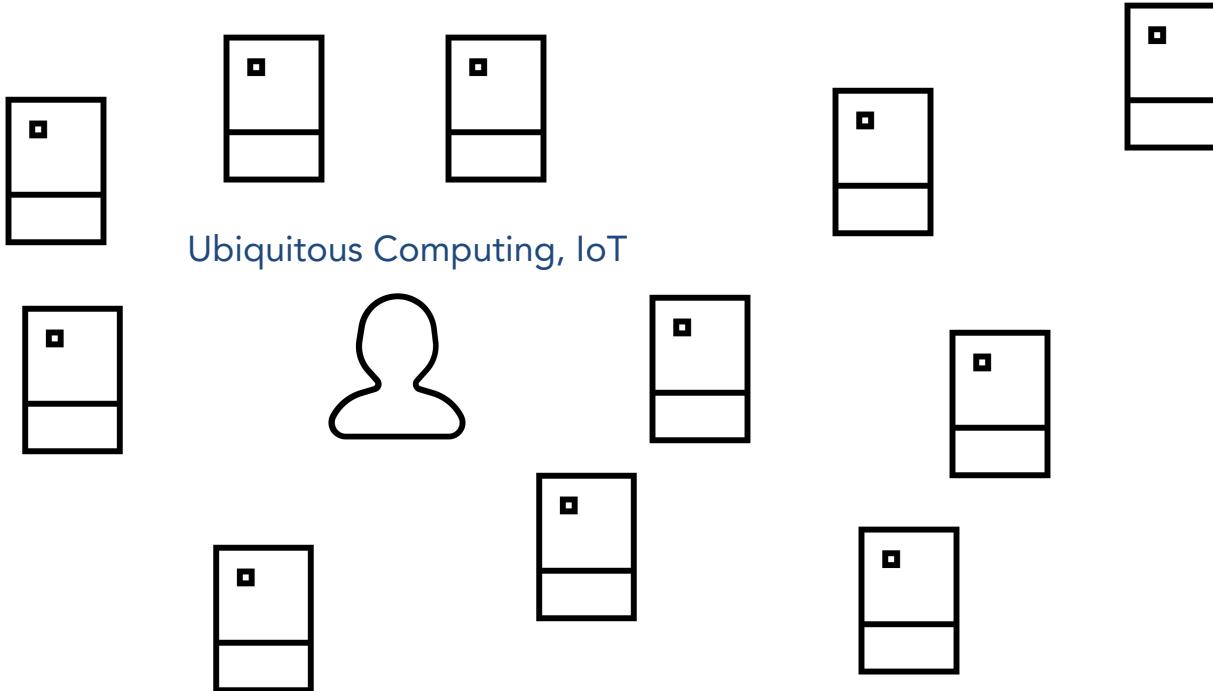


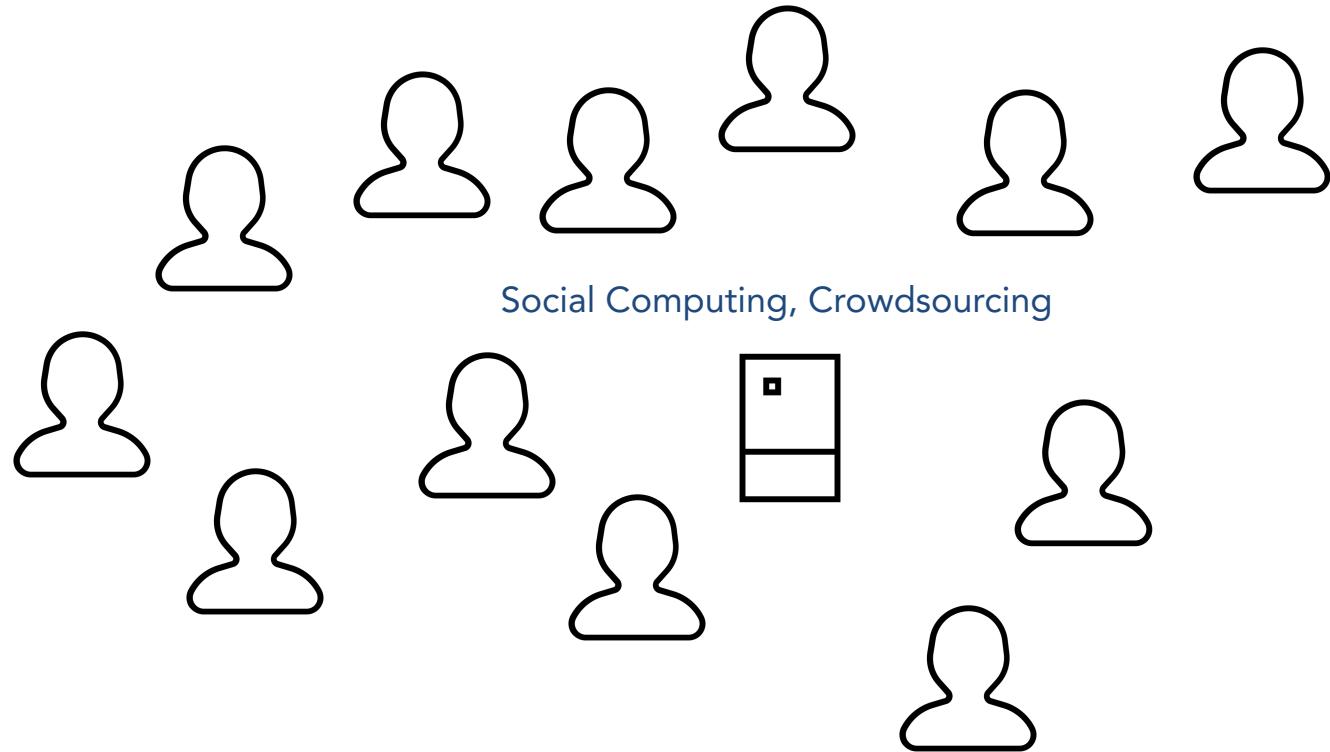
# **HCI ACCOMPLISHES THE GOAL BY DESIGNING AND BUILDING BETTER...**

interaction

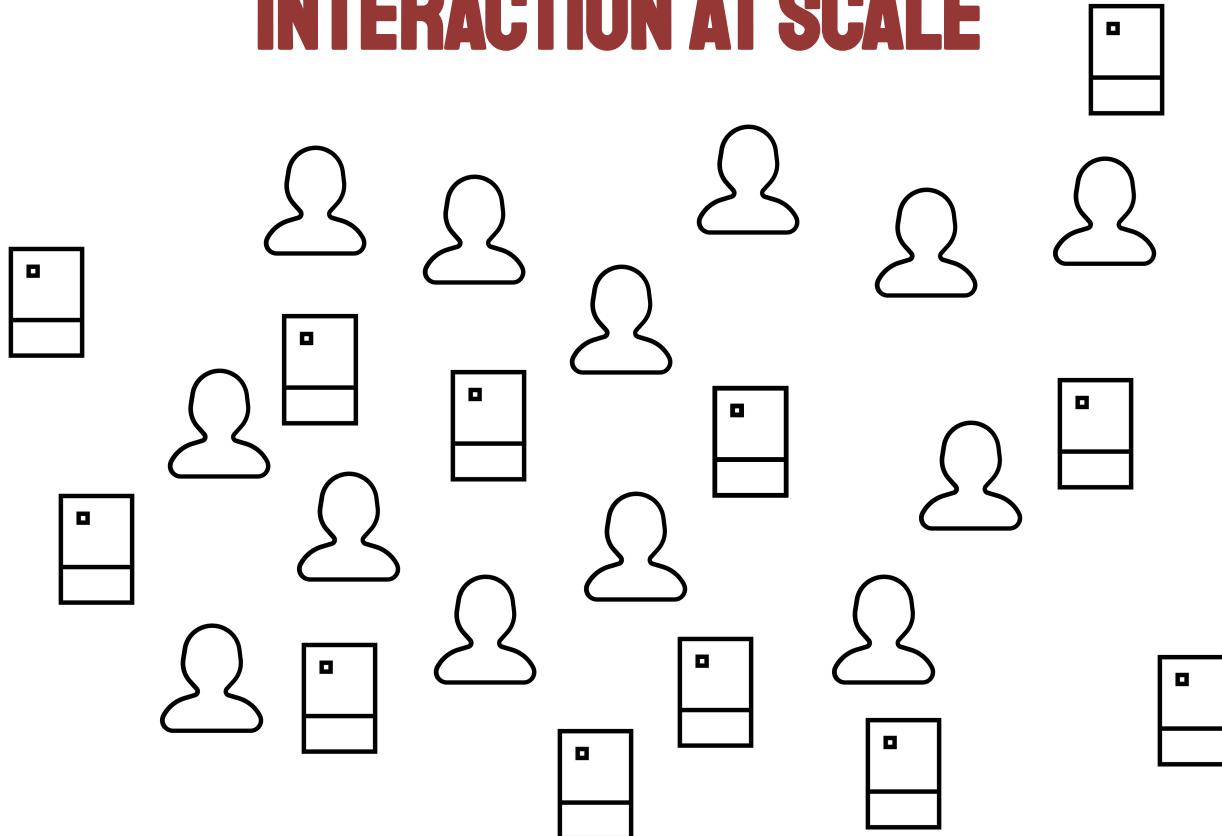


Ubiquitous Computing, IoT





# 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

*“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.

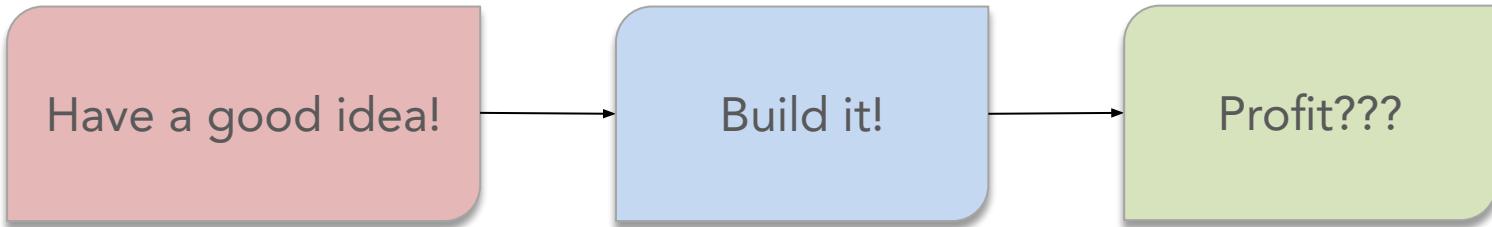
# USABILITY

How well users can  
use the system's functionality

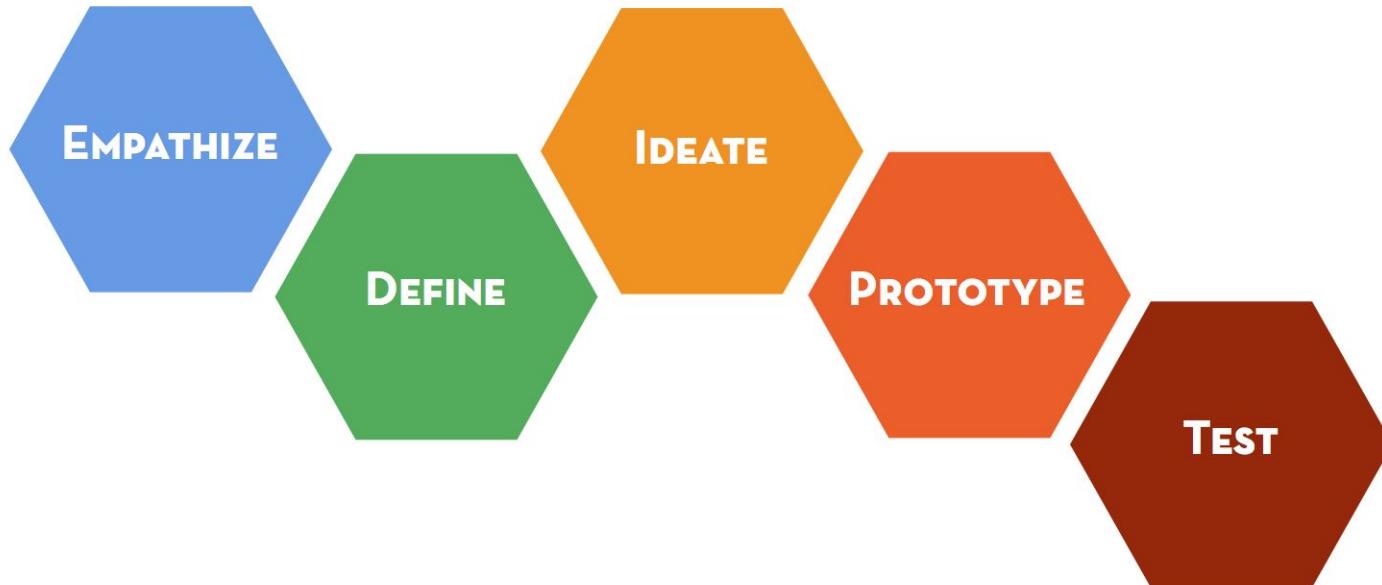
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  - ...

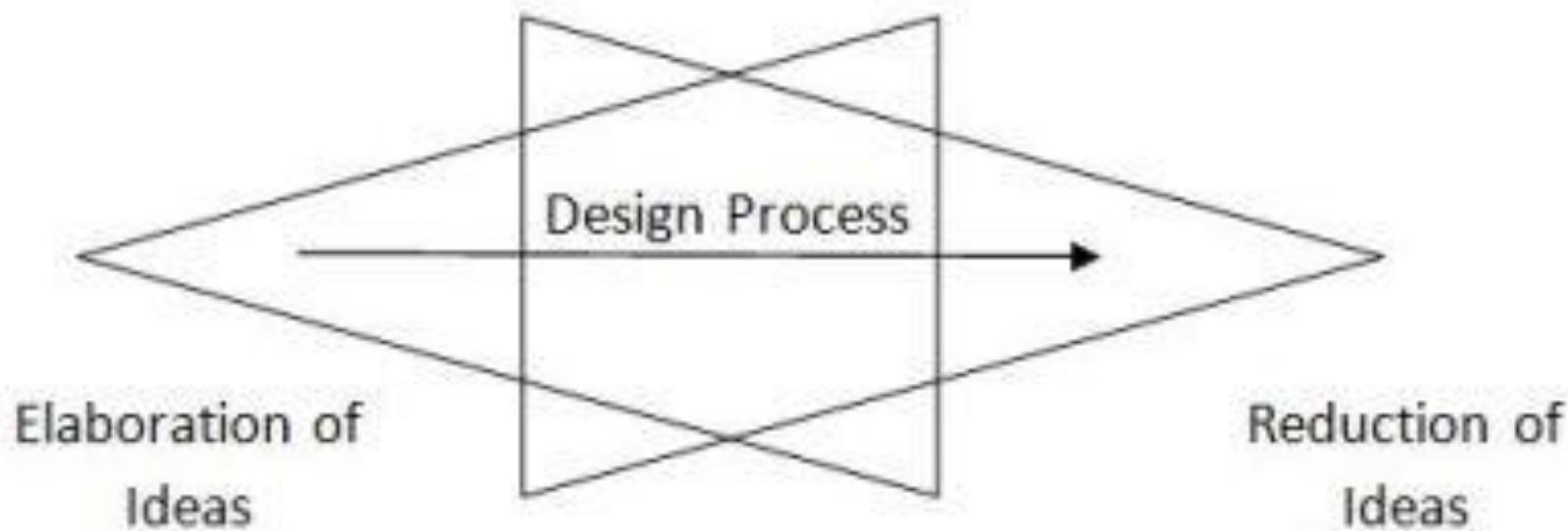
# USER-CENTERED DESIGN PROCESS



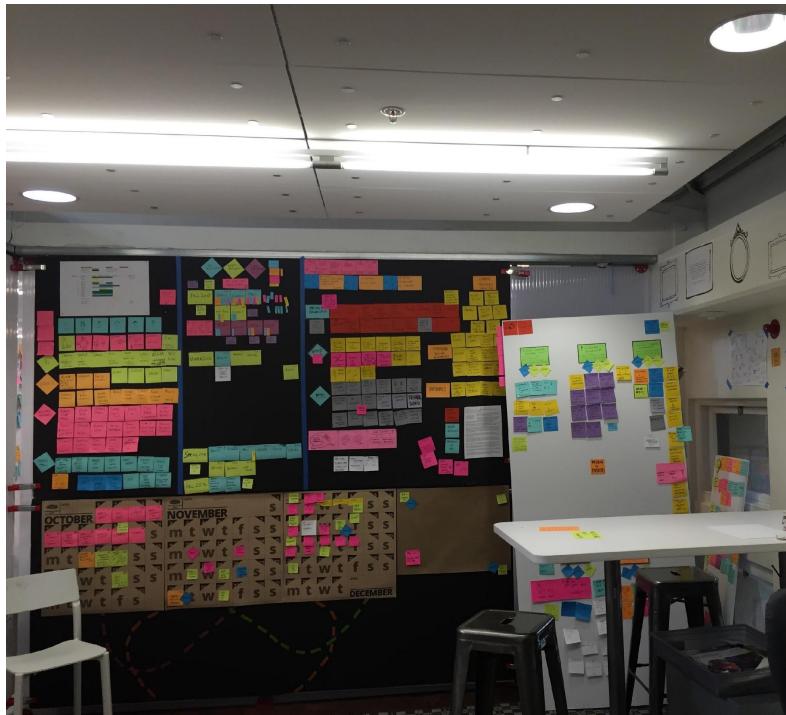
# USER-CENTERED DESIGN PROCESS



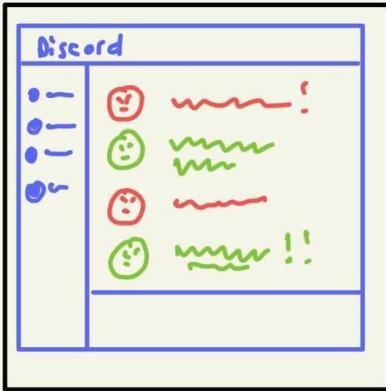
## Laseau's Funnel



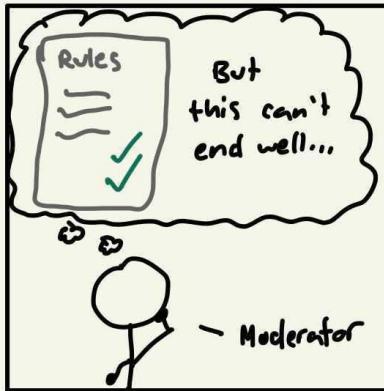
# NEEDFINDING



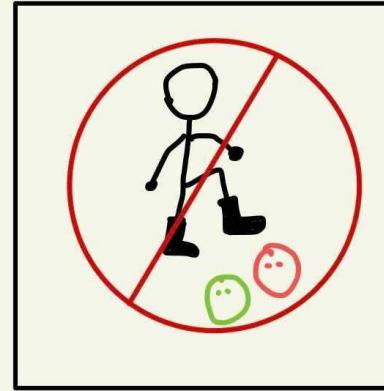
# STORYBOARDING



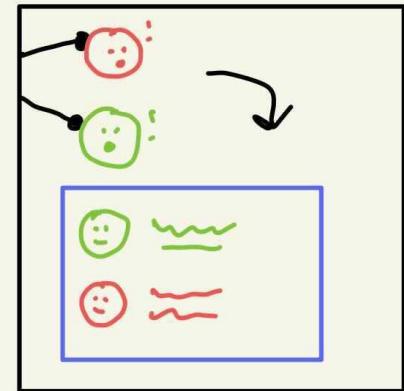
Two people are having a heated conversation



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



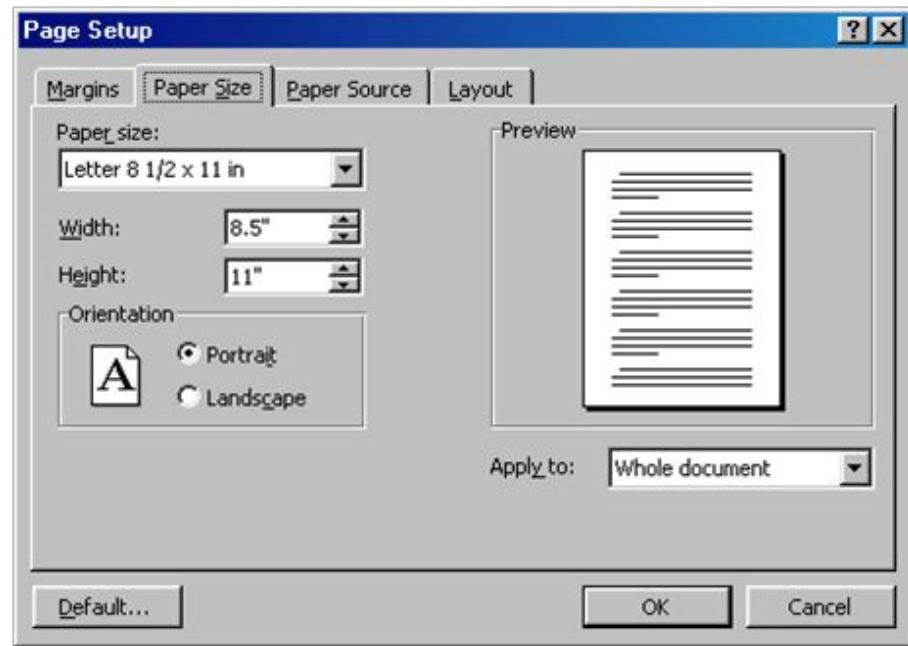
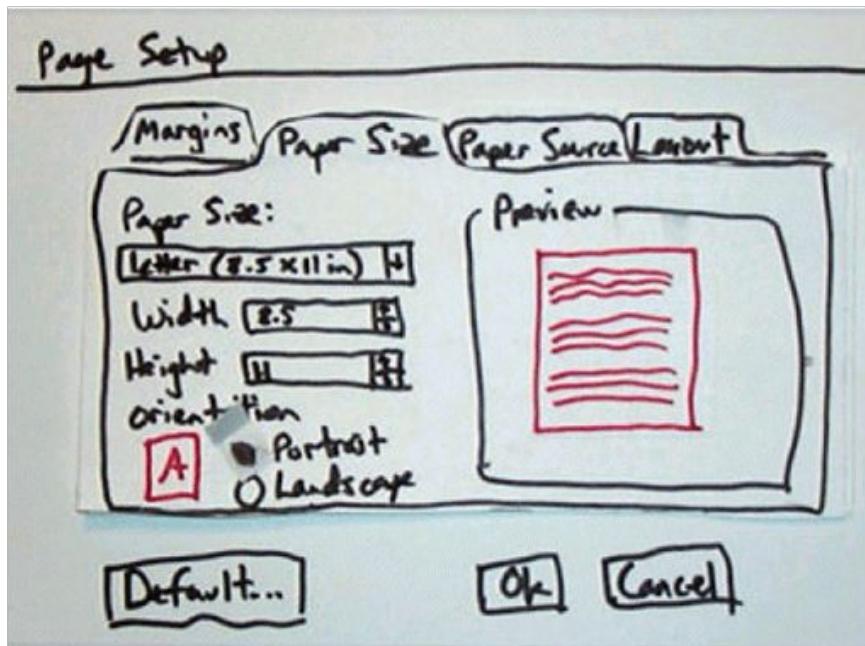
Give them an anonymous private "nudge" letting them know that they should calm down

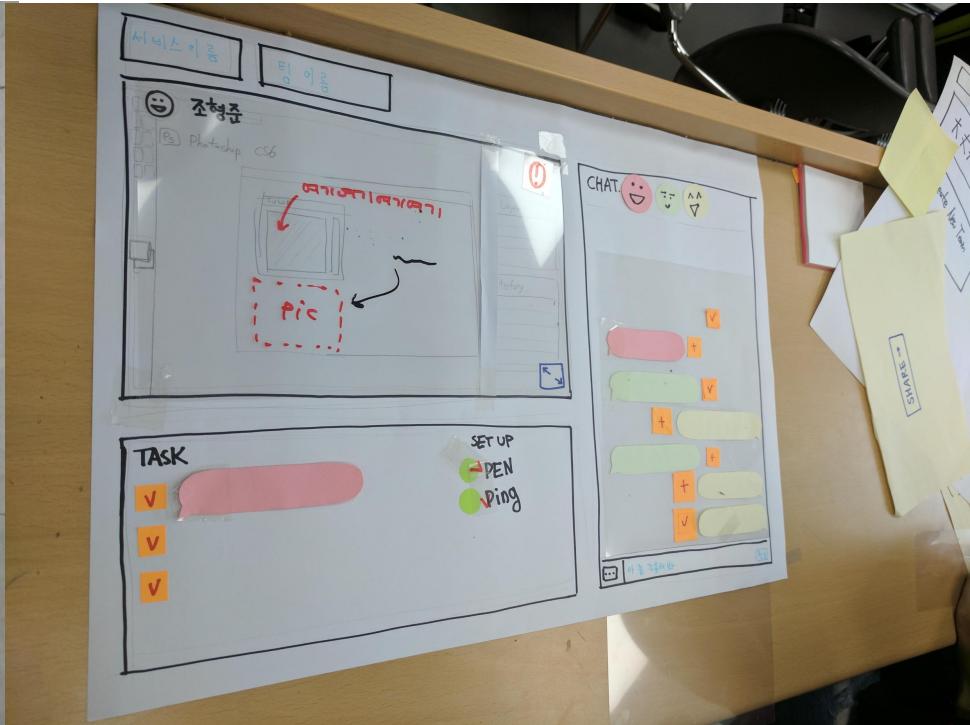
# PROTOTYPE

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

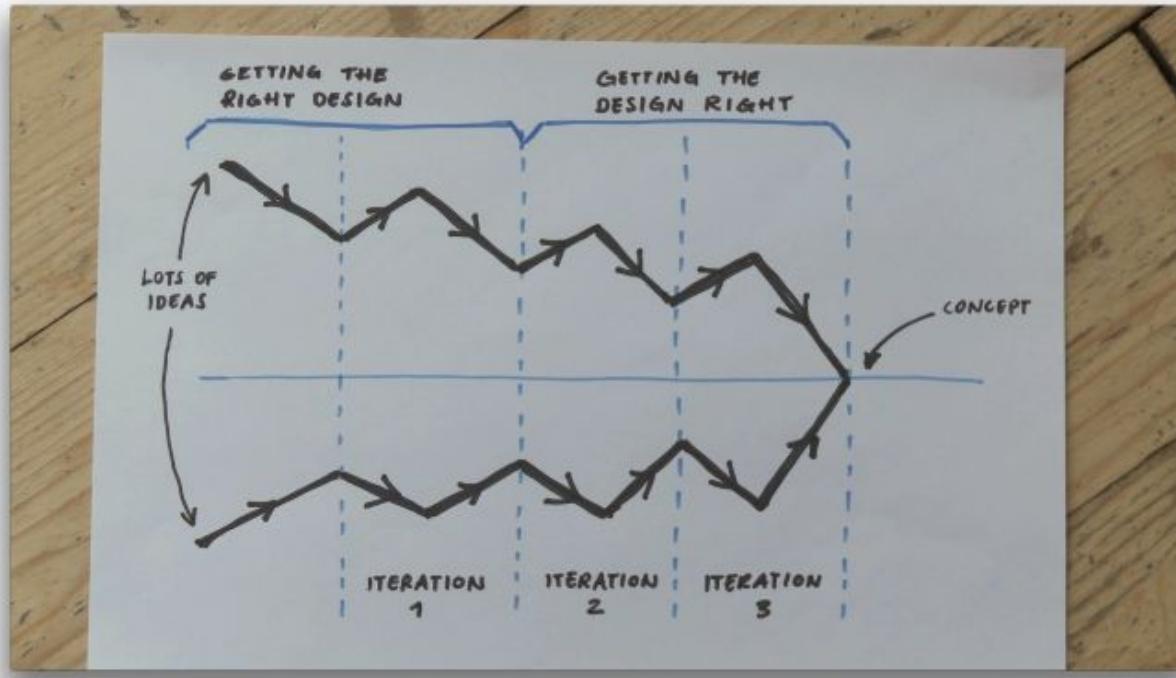
*Moggridge, Designing Interactions*

# PAPER PROTOTYPING





# LOW → HI-FIDELITY PROTOTYPING



# > What The Shell

home

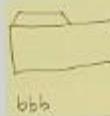
↳ bbb

bbb

trash.txt

Hi.c

home



1. copy hello→bbb
2. remove hello
3. rm -r bbb
4. move trash.txt to home

Test Command

rm

b

↳ rm -r bbb

b

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home  
aaa  
README.md



home  
 README.m



cd aaa

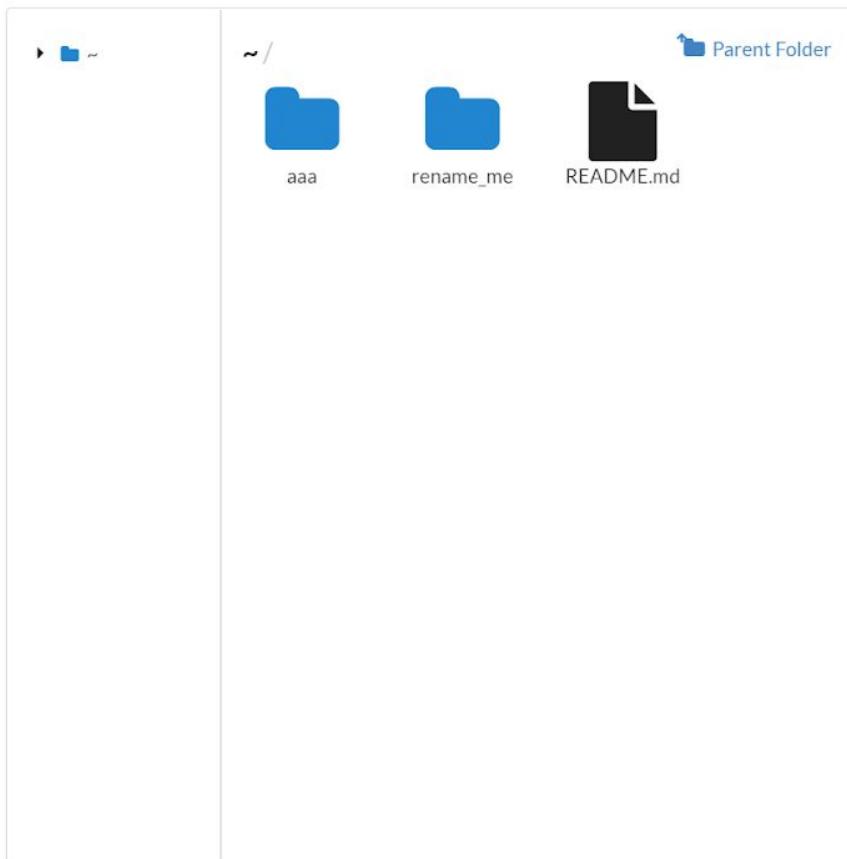
```
| cd ..
```

?

?

## First try

Team "What the Shell" from CS374 2017



Clear History

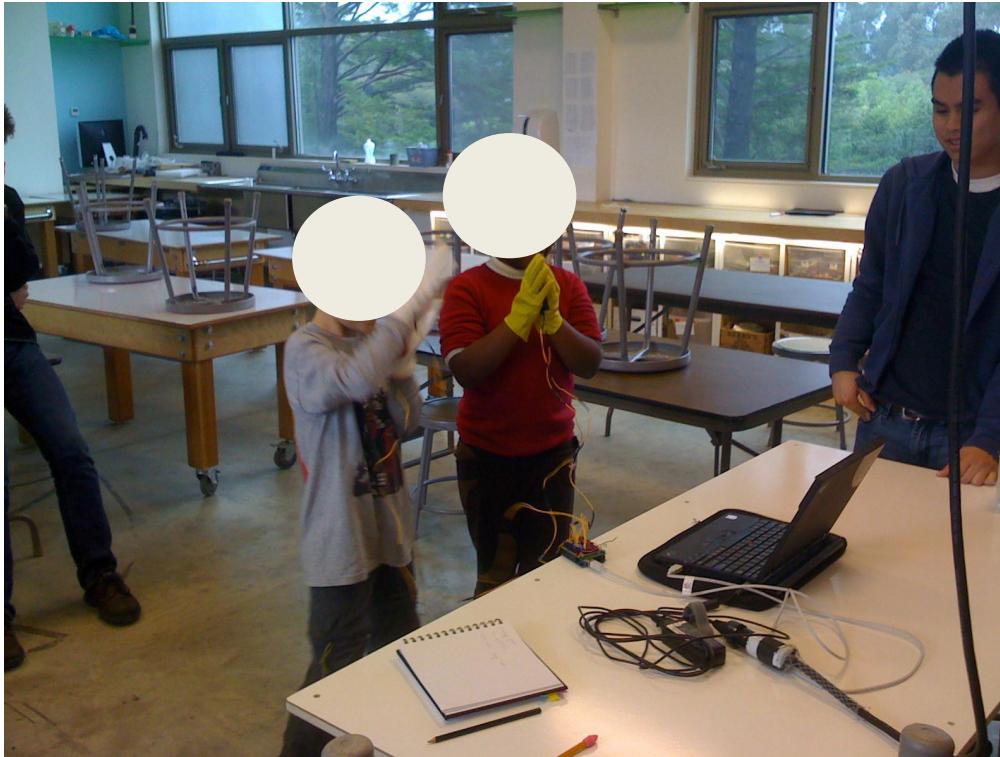
```
$ cp -r rename_me aaa  
$ cd aaa  
$ cd ~
```

Error    `aaa` is a directory

Try this    `rm -r aaa`

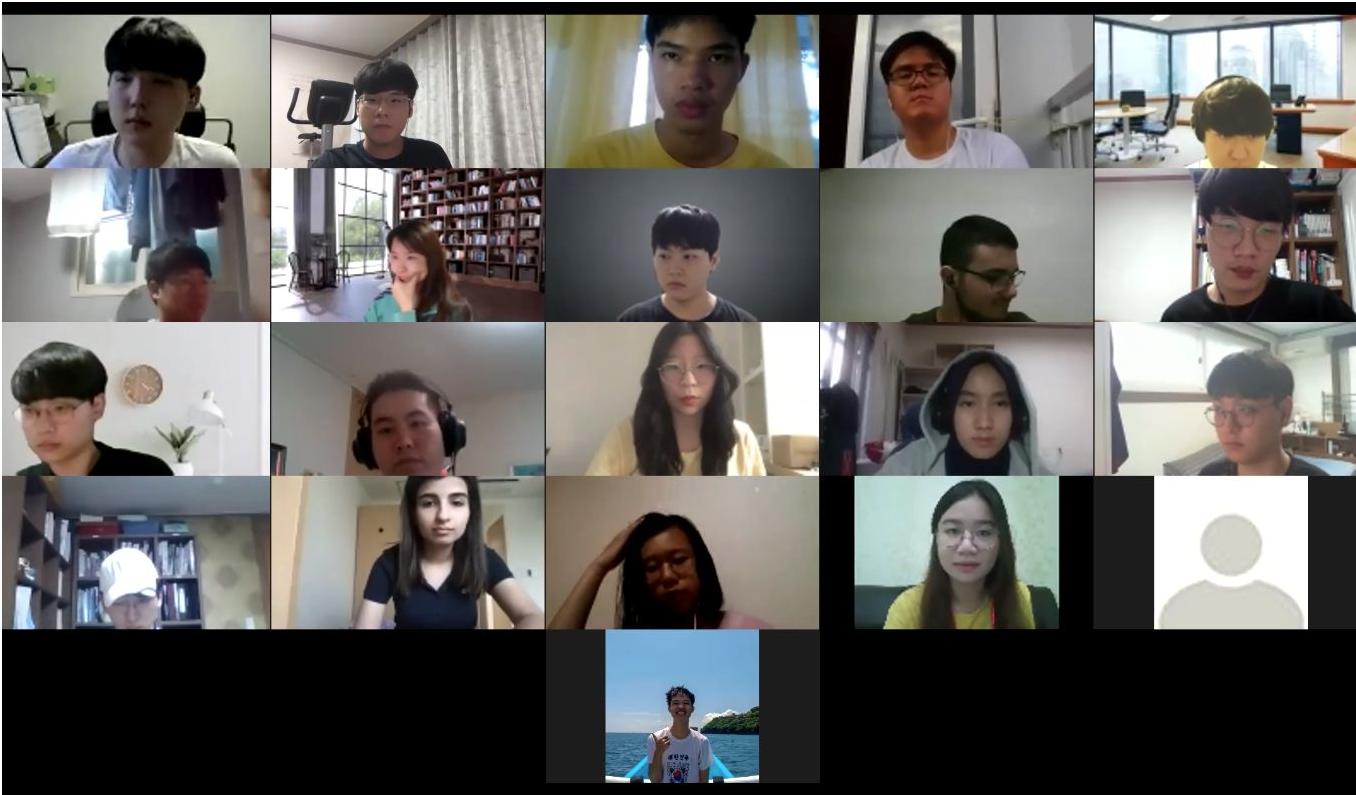
```
rm aaa
```

# USER TESTING



Team CCR, Stanford CS247 Winter 2009

# DESIGN STUDIO



# DESIGN STUDIO

The image displays a web browser window on the left and a video conference interface on the right.

**Web Application (Left):**

- Header:** DP 4: Hi-fi Prototyping 2020 - Go!, Superfood, Kabdo's Studio - Feedback - Go!, Apps, Introduction - GitBo..., How Disney Makes..., Superfood, Courses Offered, Superfood - Fireba...
- User Profile:** SUPERFOOD, Ern Khor, Height: 1.8m, Weight: 80kg, Edit Profile, Log out.
- Timeline:** 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.
- Nutrients Taken:** Today, This Week, This Month. Sodium: 72.7%, Protein: 24.8%, Fat: 27.9%. % Daily Values based on your daily nutrient needs.

**Video Conference (Right):**

- A vertical stack of five video feeds showing different participants in a video call.

# FINAL PRESENTATIONS





DP1 : RECORDING  
OUR INSIGHTS

Self-boarding house's kitchen is not fit to cook.

- narrow, poor at ventilation

Self-boarders have only few cookware.

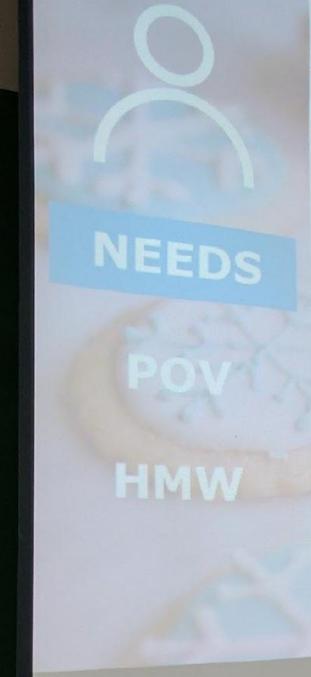
Too many processes for cleaning up.

- throwing trashes away, washing dishes

Not much chances to eat at home.



2024 INTRODUCTORY



## 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.

A young woman with long dark hair tied back, wearing glasses, a white short-sleeved shirt, and a denim overall dress, stands facing a man at the podium.

A young man with short dark hair and glasses, wearing a white t-shirt with a black graphic, stands facing the woman.

A young woman with long dark hair, wearing a white t-shirt, stands behind the podium.

A young man with a baseball cap, wearing a grey button-down shirt, stands behind the podium.

### Presentation Order

- |                  |          |                  |                |
|------------------|----------|------------------|----------------|
| 1. What The Hell | 6. Sogum | 11. K2T2         | 16. Letter Rus |
| 2. -             | 7. -     | 12. -            | 17. KAISTions  |
| 8. -             | 13. -    | 18. Babe' Burton | 19. Oldboy     |

Creativity & Challenge

KAIST

# **WHAT YOU'LL LEARN IN CS374**

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

# HOW DO USER INTERFACES WORK?

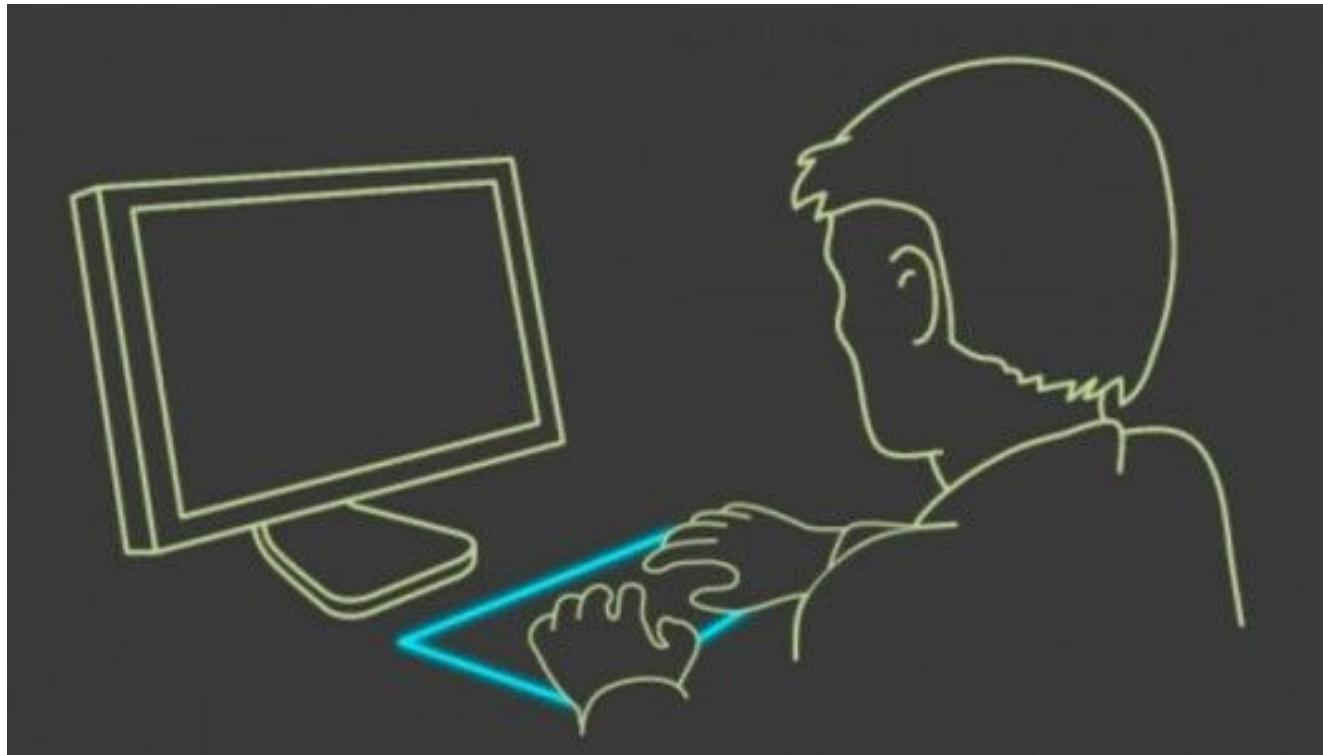
- HTML/CSS/JavaScript
  - No prior knowledge is required.
- How do modern UIs work?
  - Handling input, output, data, interactivity, etc.
- Other implementation topics
  - Layout, color, typography, accessibility, etc.

# What is HCI?

Computer  
system

Interaction  
interface

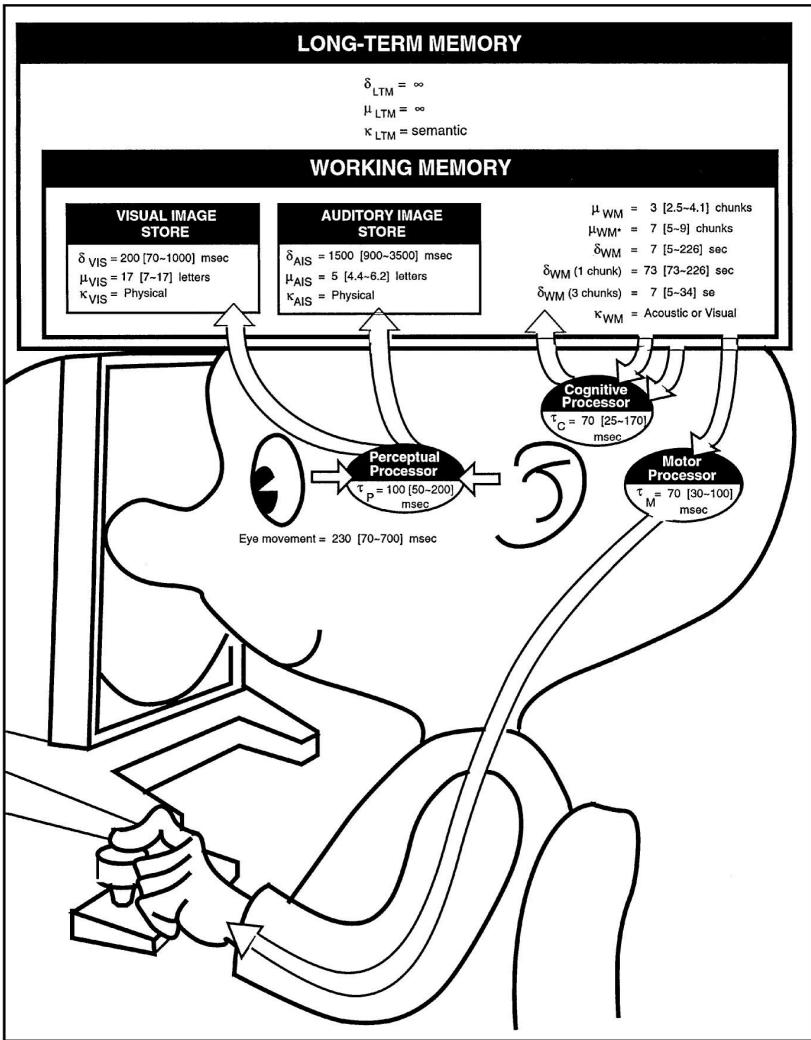
Human  
user



# 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.

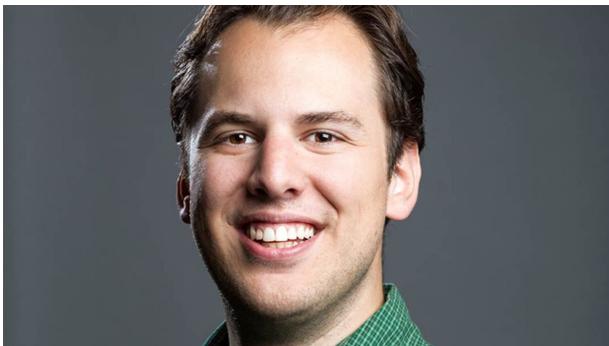


- Groupware
- Work-focused
- Collaboration
- Efficient communication
- Productivity tools
- CSCW



- 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?



Google



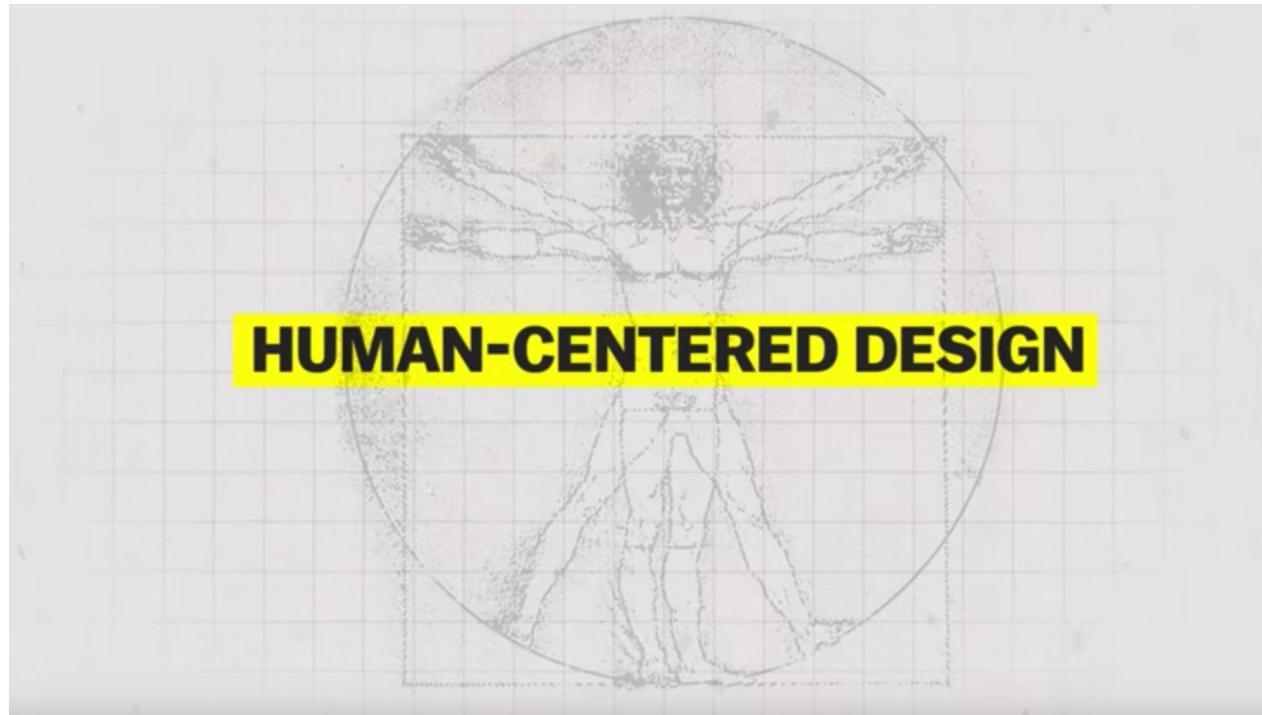
HCI background!

<http://www.theverge.com/2013/5/13/4296760/sketching-instagram-co-founder-mike-krieger-reveals-apps-humble-beginnings>

Source: Wikimedia Commons by Stansfield PL

# Video Break

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



<https://www.youtube.com/watch?v=yY96hTb8WgI>

# Course Overview

# WHO AM I? PROFESSOR JOSEPH SEERING

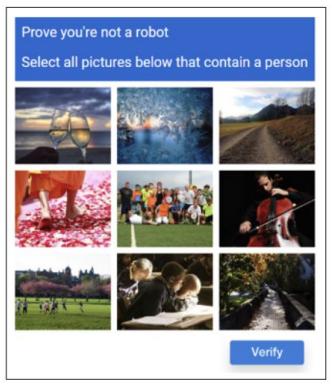
- Assistant Professor, KAIST
  - Postdoc, Stanford University
  - Ph.D., Carnegie Mellon University
  - M.S., Carnegie Mellon University
  - B.A., Harvard University
  - Trust and Safety Consultant
- 
- [cstlab.org](http://cstlab.org)
  - [joseph.seering.org](http://joseph.seering.org)
- 
- Research Interests: HCI, Social Computing, “Trust & Safety”



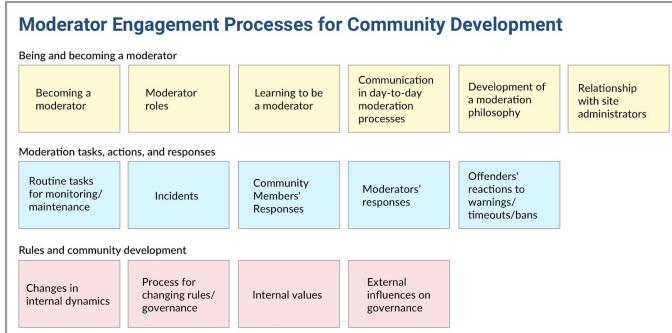


*How can we make a social internet that's safer and more trustworthy?*

- 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



User research on community moderation processes

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(>w<)o  
P8 @pete\_bot\_ don't hit things!  
pete\_bot\_: @ P8 don't hit things!?! 🙀  
P10 @pete\_bot\_ Bad pete  
pete\_bot\_: @ P10 °( ° ^ʌ^ ° )°.  
P11 @pete\_bot\_ bad bot, no hit so Ø\_Ø

Conversational agents for community development on Twitch



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-I5)

- 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

The screenshot shows the KAIST School of Computing website for the CS374 course. The header includes the KAIST logo and the course title "CS374 Introduction to Human-Computer Interaction". Below the header, there's a navigation bar with links for HOME, SCHEDULE, COURSE LOGISTICS, ASSIGNMENTS, DESIGN PROJECT, and PROJECT GALLERY. The main content area displays the course title "CS374 Introduction to Human-Computer Interaction / 2024 Spring". Under "Course Description", it states: "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." Under "Prerequisites", it says: "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." The "Topics" section lists major topics including Usability, Learnability, Efficiency, Safety, User-Centered Design Process, Rapid Prototyping, Iterative Design, Needfinding, Contextual Inquiry, Storyboards, Affordances, Metaphors, Conceptual Models, User-Interface Software Architecture, Input and Output, Visual Information Design, Layout, Color, Typography, Usability Testing & Heuristic Evaluation, and Experimental Design & Analysis.

The screenshot shows the Campuswire Class feed for the CS374 course. The feed includes a note from Yoonsaeo Choi welcoming students to the class. It also features a document titled "Welcome to CS374!" which contains instructions for students. A comment from Minwoo, Zee Wung, Sean Tritton, Adit, Jooyeon, and 32 others discusses setting up a live-video environment. The interface includes standard social media-style features like likes, comments, and shares.

The screenshot shows a Google Doc titled "Efficiency 1". The "Outline" sidebar shows a single section titled "Efficiency (1/2)". The main content area is titled "Chunking" and contains the following text: "Chunking is a unit of memory or perception" and "Depends both on presentation and on what you already know". It includes a diagram of a chessboard illustrating chunking. The "Shortcuts" section lists keyboard shortcuts for various Google Doc functions like Undo, Redo, and Paste.

# 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