What is HCI Research?

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CS197 Section 1

Today

- What is HCI research
- Intros
- Section expectations
- What is the IRB
- Project overviews and starter tasks

What is HCI Research?

Recap: What is Research?

An implicit assumption: industry and other researchers all thought one way about a problem.

"**No, let's do it this way instead**:" The researcher offered a new perspective that nobody had ever considered or made feasible before. They proved out their idea as the better approach.

Envisioning and understanding the future of interaction between people, society, and technology

This is not like typical HCI classes.

Your goal is not just to fashion an alignment between people and technology.
Your goal is to articulate and generate entirely new ideas about that relationship.

HCI Research Comes in Many Forms

- Ubiquitous computing
- Social computing
- Tangibles
- Accessibility
- Design Tools
- Media and Creativity
- Programming Tools
- Design for special populations (e.g., children)
- And more….

We often discuss HCI research as "systems" or "studies"

Systems: main contribution is a cool new technology, typically with lightweight evaluation

Studies: main contribution is some understanding of interactions or behavior, typically including a controlled experiment

Ubiquitous Computing (UbiComp)

Main Idea: computers, everywhere

Example: UbiFit Garden

- We can place sensors in your phone, which you have with you always
- Those sensors can help you track your activity
- By displaying activity we can encourage people to exercise more

Social Computing

Main Idea: creating, recreating, or studying social behavior through technology

Example: Soylent
- Use crowdsourcing to edit writing
- Online workers can find points of improvement, fix those parts, and verify those fixes

Tangibles

Main idea: people can interact with digital information in the physical world

Example: inFORM
- A grid of pegs that can independently move to create a 2.5D display, aka Shape Displays
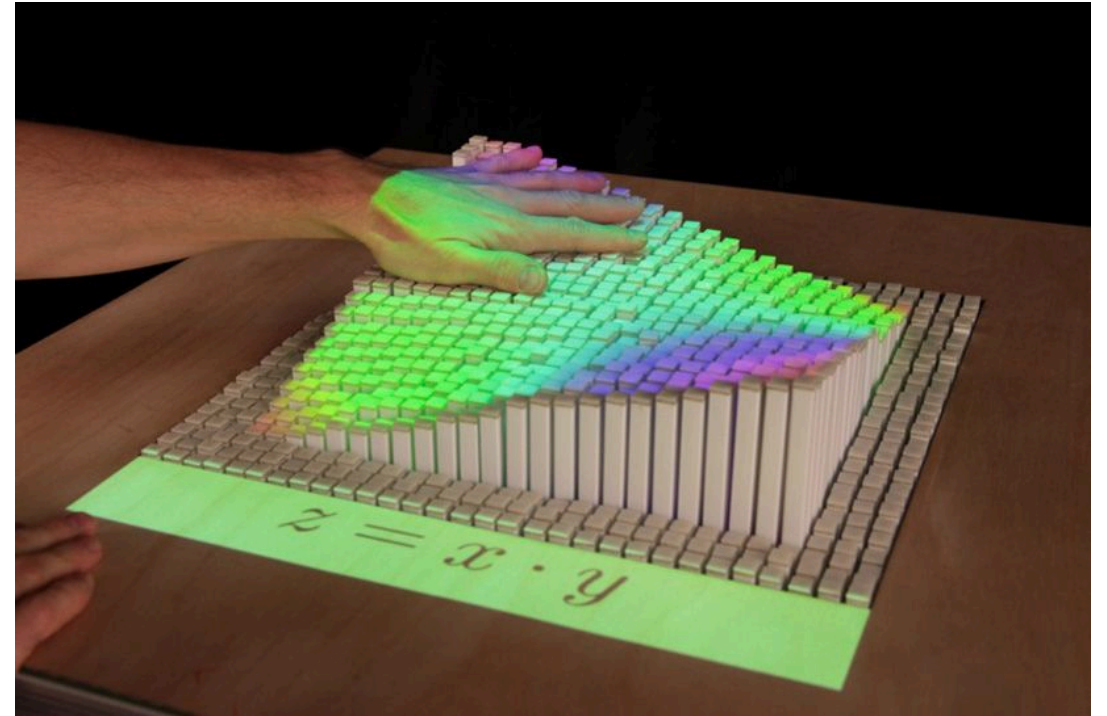
Special Populations

Main Idea: unique user groups require unique technologies

Example: Coco's Videos
- Preschoolers can self-regulate their technology use
- Kids can self-select usage time, usage plan, and post-use activity in advance; tool will remind them to stick to this plan

Accessibility

Main Idea: make technology accessible for everyone
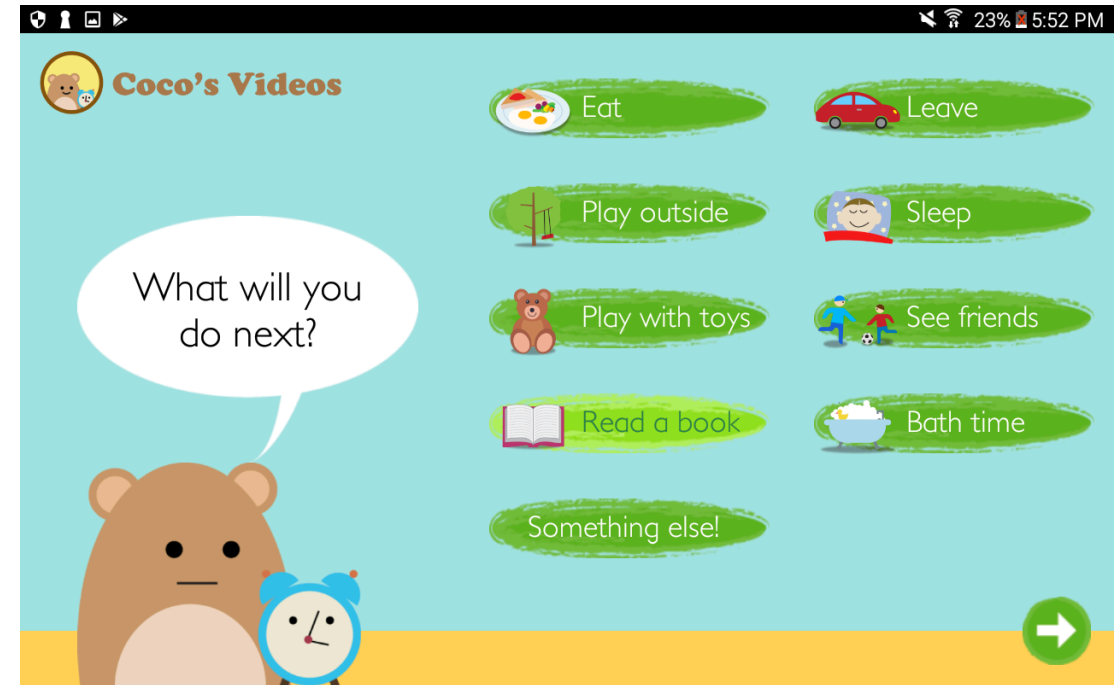
Example: Spatial Layouts for Visually Impaired
- Use tactile sheets to print spatial layouts for web/graphic design
- Overlay these sheets on tablets to combine tactile feedback with a self-voicing digital design tool

"Element: Heading, level 2.
Content: Project 2.
Text alignment: left."
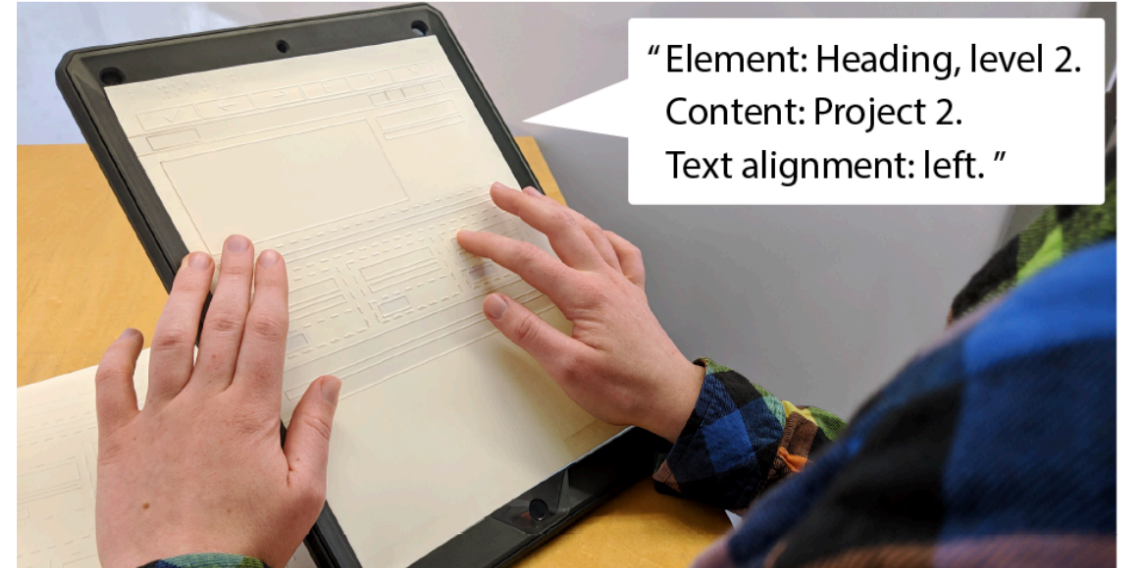
Design Tools

Main Idea: use technology to make design easier

Example: Learning Visual Importance
- Create neural networks that predict the relative importance of different elements in visual content
- Can be used for automatic thumbnailing and real-time design feedback

Bylinskii et al., 2017 14

Media and Creativity

Main Idea: technology can enhance creativity and lead to better creative tools

Example: Draco
- Rather than animate individual objects, use motion controls to add coordinated motions to collections of objects

Kazi et al., 2014
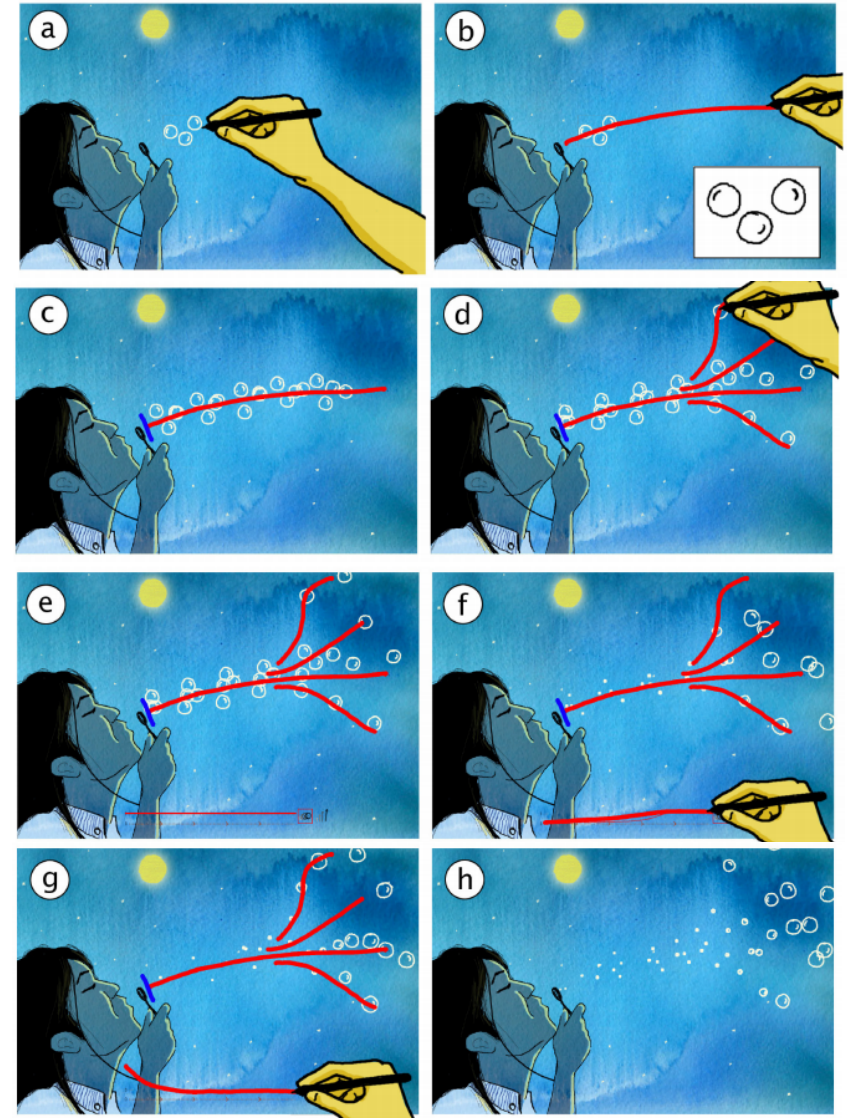
Programming Tools

Main Idea: new technologies can make programming easier to do or learn

Example: Designing they Whyline
- Debugging is an interrogative process
- Created a tool that allows users to ask questions about WHY or WHY NOT certain things are happening in their programs

questions are chosen from a hierarchical menu

code related to the question is highlighted
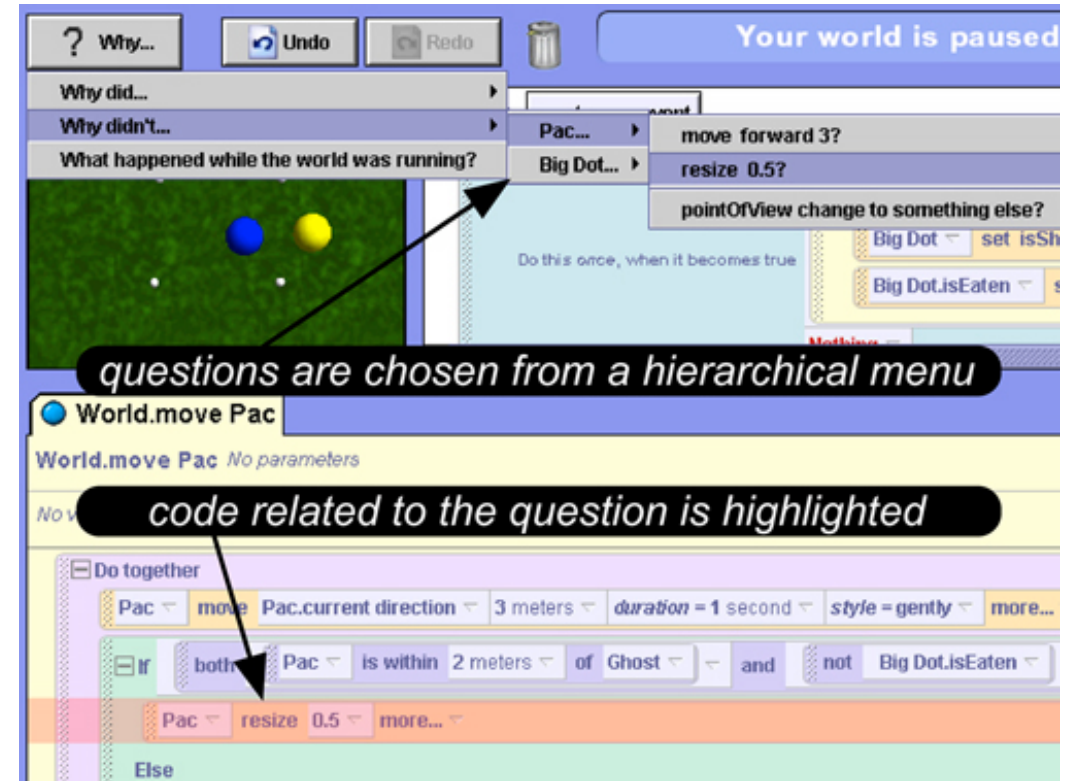
Takeaway: HCI research is broad, and there are opportunities to pursue projects that align with almost any interest

Introductions

Nice to meet you!

- Name
- Why are you interested in research?
- Why are you interested in HCI?

Section Expectations

What you can expect from me

- I will arrive to section 5 minutes early and will stay up to 10 minutes late for any quick questions or eager discussions
- I will start section on time every week and I will end on time
- I WILL NOT know the answers to all of your questions. Such is research. I WILL work with you to find the answers (or reasonable approximations thereof).
- I WANT feedback. Something is confusing, stressful, moving too fast, moving too slow? Tell me.

What I expect from you

- Respect each other. Most sections will function like research group meetings. This mean you will share out your progress and get feedback from each other. For that to work you need to be listening.
- Laptops closed, unless we are working on something that requires a laptop.
- This is a collaborative space and we are here to support each other. Research is not an independent endeavor. Share ideas and encouragement, but also accept criticism as constructive.

What is IRB?

What is the Institutional Review Board (IRB)

- A panel of faculty, students, other professionals, and community members
- Federally mandated for any US institution that accepts Federal money to conduct Human Subjects Research
- Ensures **Human Subjects Research** follows **federal ethics regulations**

  - Research: an investigation design to develop or contribute novel, generalizable knowledge

  - Human Subjects: individuals about whom a research obtains either a) data through interaction or intervention with the individual or b) identifiable private information

  - Federal ethics regulations: outlined in The Belmont Report (think: respect for participants, "do no harm", and don't be exploitative)

IRB and HCI

- HCI is a discipline of Computer Science that relies heavily on human subjects
- We need to be sure to treat these human subjects ethically
- This means that HCI projects that include human subjects research must undergo IRB review

Project Overviews and Starter Tasks

Assignment 1: Starter task

1) CITI training: university-required ethics training for human subjects research
2) Git (version control) tutorial

Assignment 1: Paper Reading

- Pick a paper (from a provided list) and outline it (i.e., convert it from full paper form back into a high-level outline/overview explaining the argument)
- Each paper selected corresponds to a section project, so pick a paper that relates to the project that intrigues you most

  - Note: you are not tying yourself to a project here. You are gaining background to inform your decision. We encourage you to skim other papers of interest; you just only need to turn in an outline for one.

The Projects

Algorithmic Transparency

We know: users mistrust online profiles they perceive to be auto-generated only when users believed they saw a mixed set of human- and AI-generated profiles

We want to find out: how indicators of algorithmic confidence, like quantitative percentages or qualitative text descriptions (e.g., very confident), might affect user trust

Starter paper: AI-Mediated Communication: How the Perception that Profile Text was Written by AI Affects Trustworthiness
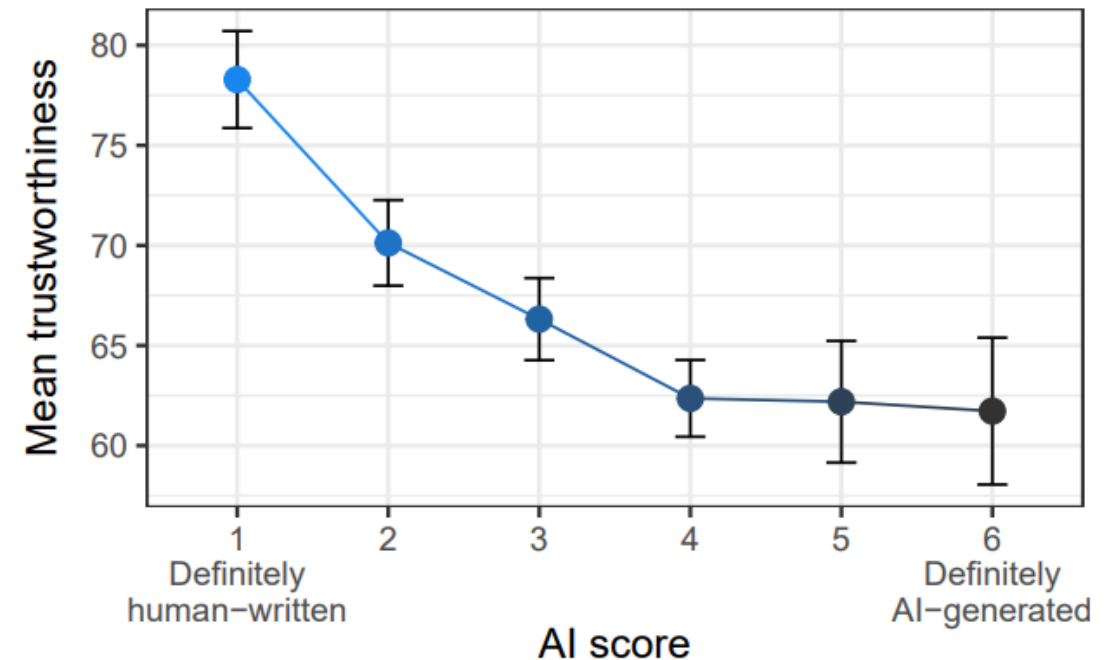
Automatic Content Warnings
for Sensitive Posts

We know:
- users rely on online content creators to post trigger warnings about distressing content
- browser extensions can control what content users see on the web (e.g., to control procrastination)

We want to find out: if we can automatically generate online trigger warnings for distressing content

Starter paper: Rotating Online Behavior Change Interventions Increases Effectiveness But Also Increases Attrition
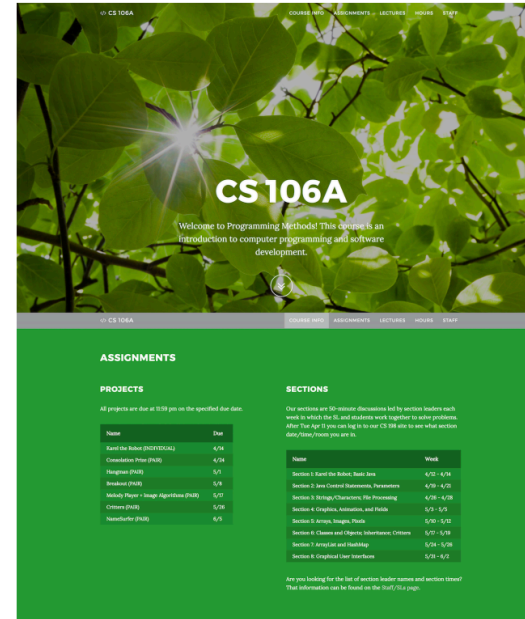

Kovacs et al., 2018 31
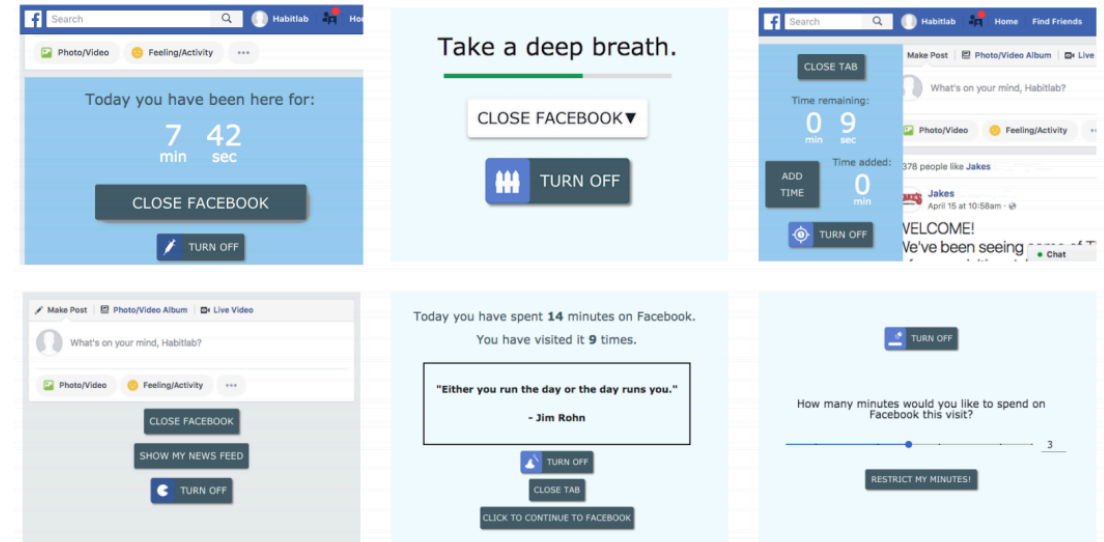
Belonging and Bias in Web Interfaces

We know: that gender biases can be triggered by web design

We want to find out: how colorfulness, complexity, imagery, and/or language independently affect bias and belonging in web interfaces

Starter paper: Gender-Inclusive Design: Sense of Belonging and Bias in Web Interfaces
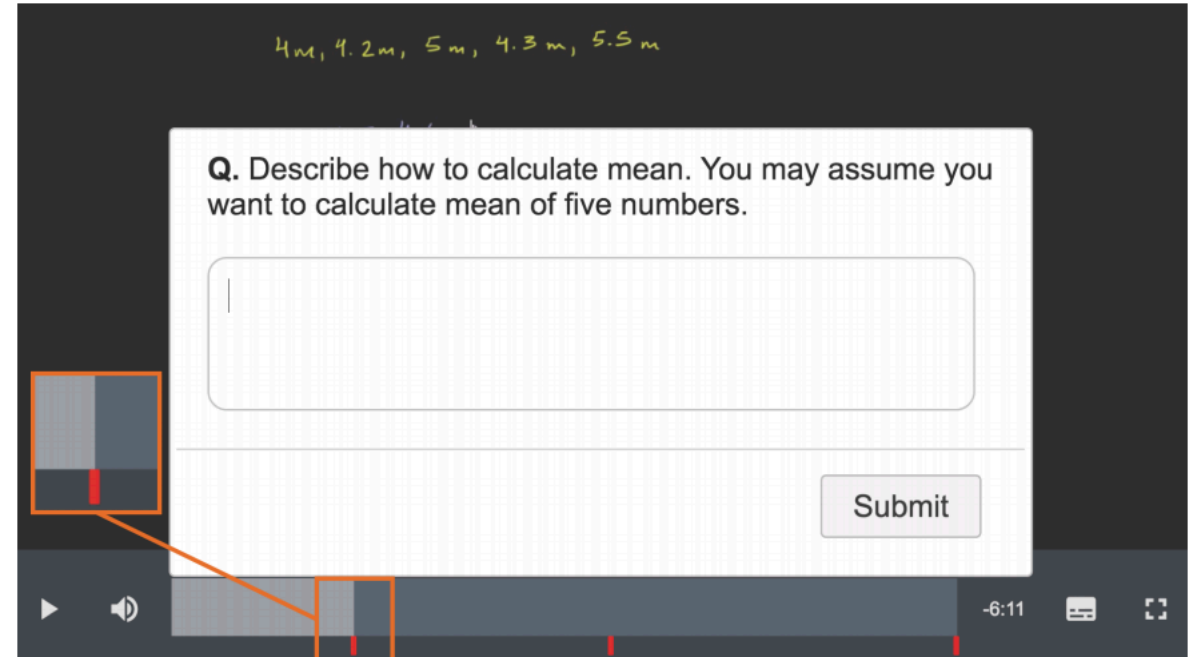
Learning Effects of In-Video Reflection Prompting

We know: in-video reflection prompts can help increase attention during educational videos

We want to find out: if these same prompts affect learning outcomes as well

Starter paper: Understanding the Effect of In-Video Prompting on Learners and Instructors

Effect of Statuses, Typing Indicators, and Read Receipts on Digital Communication

We know: people express and detect emotions in text communication using four in-message cues

We want to find out: how online message "metadata" (e.g., status, typing indicators, read receipts) affects digital communication and meaning

Starter paper: Expressing Emotion in Text-based Communication
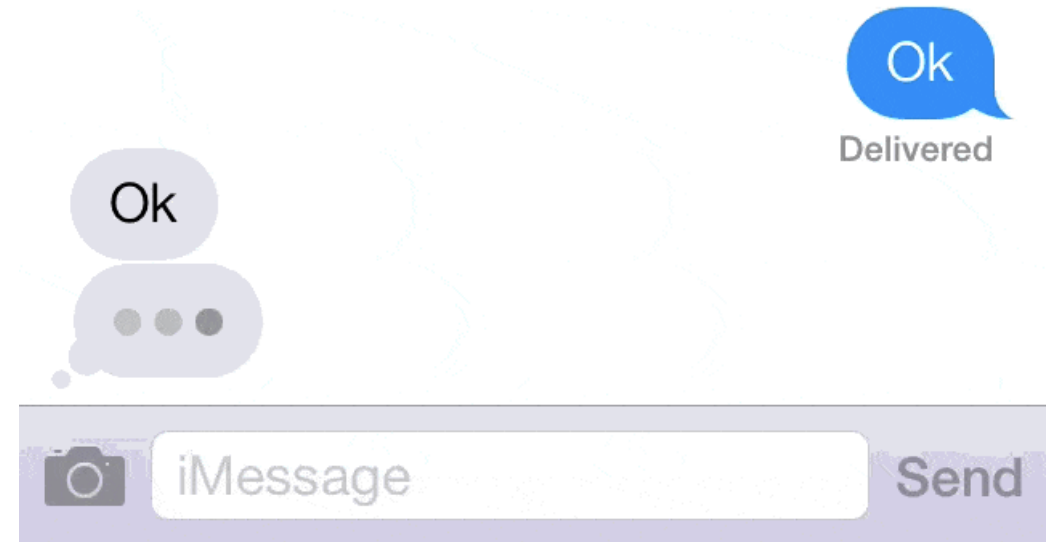
Assignment 1 Summary

- Starter task
  - CITI Training
  - Git tutorial
- Paper outline
- Project interest ranking