

# **IN4MATX 133: User Interface Software**

**Lecture 20:**  
**Wrap-Up**

Professor Daniel A. Epstein  
TA Goda Addanki  
TA Seolha Lee

# Announcements

- A5 due Wednesday
- In-class participation & A4 grades hopefully early next week
  - Slack participation/extra credit will be added after the A5 deadline
  - We'll handle regrades after in-class and A4

# Announcements

Department Activated [Self Activated](#) [DOWNLOAD RESULTS](#)

Filter: [Winter 2022](#) [Filter by status](#) [CLEAR FILTER](#)

Class	Status	Responses	Actions
IN4MATX 232 LEC A: RESEARCH IN HCC (36630)	Open until 3/14/2022 7:50am	38% 8/21	⋮
IN4MATX 209S LEC A: SEMINAR INFORMATICS (36620)	Open until 3/14/2022 7:50am	35% 7/20	⋮
IN4MATX 133 LEC A: USER INTERACTION SW (36110)	Open until 3/14/2022 7:50am	22% 28/126	⋮

# Today's goals

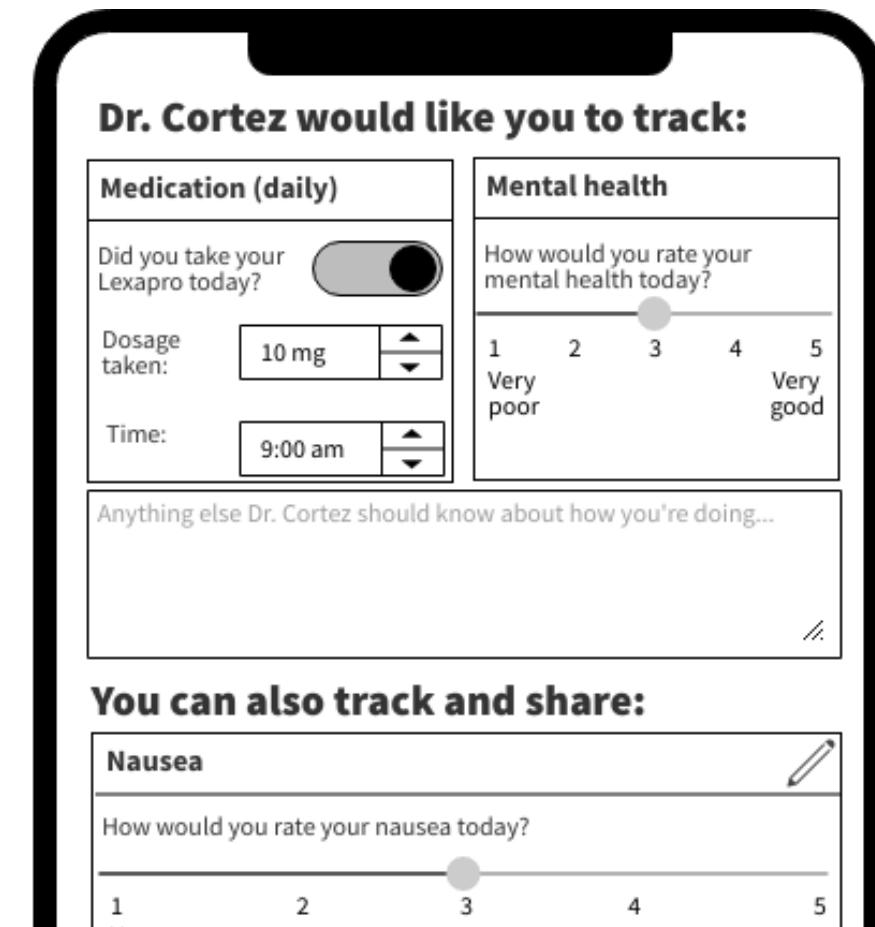
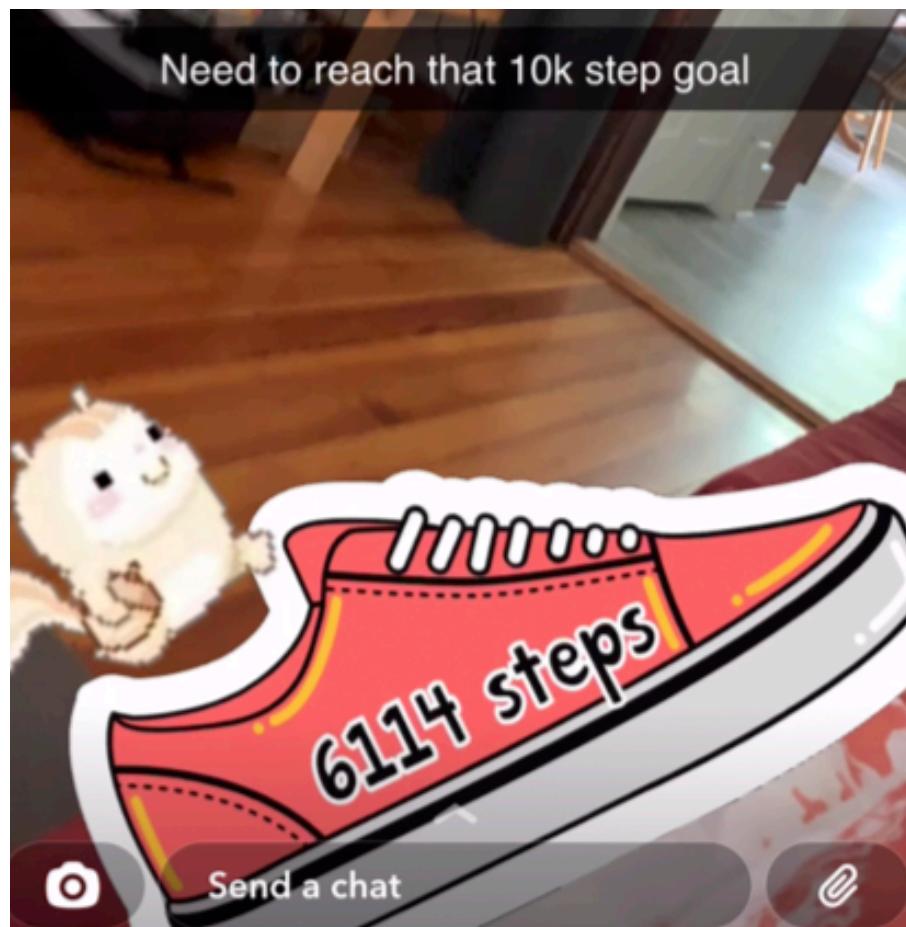
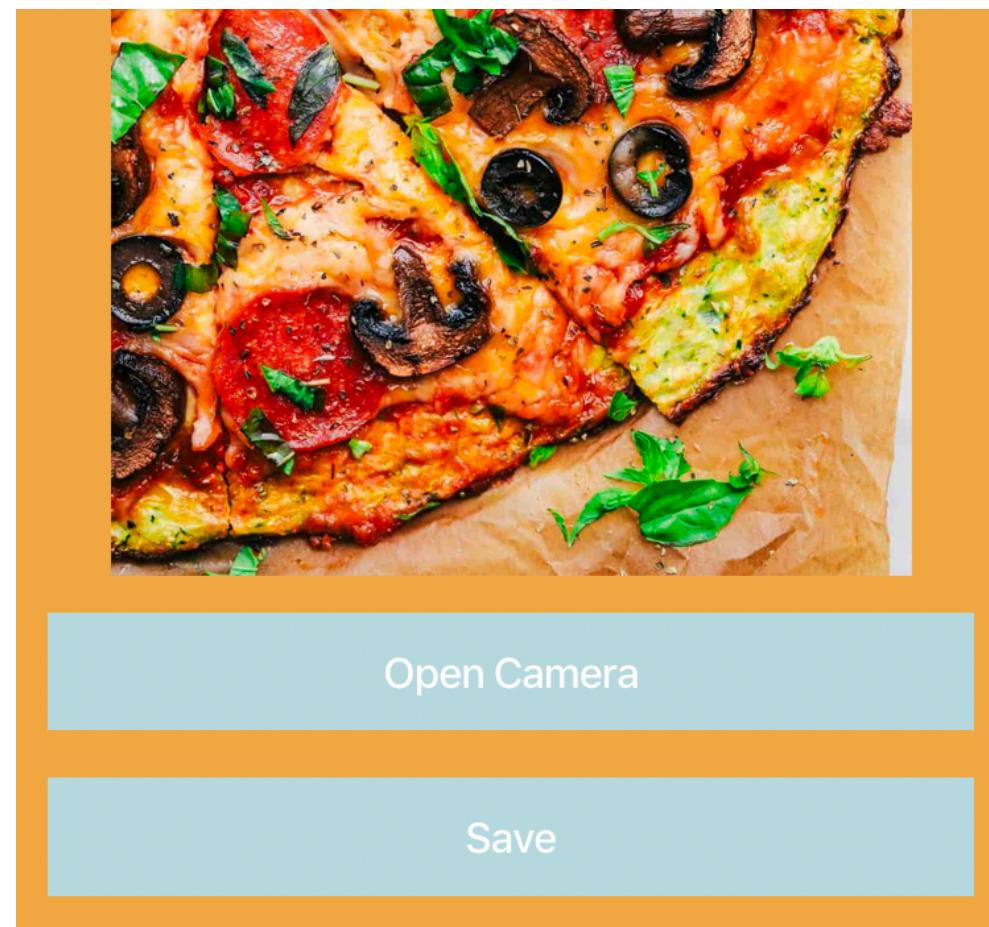
**By the end of today, you should be able to...**

- Describe how concepts from IN4MATX 133 can integrate into research and practice
- Summarize what you learned in IN4MATX 133
- Describe the relevance of the topics to different disciplines in industry
- Fill out the course evaluation!

# **Putting 133 concepts to use**

- How can 133 concepts be used in research and practice?

# Putting 133 concepts to use

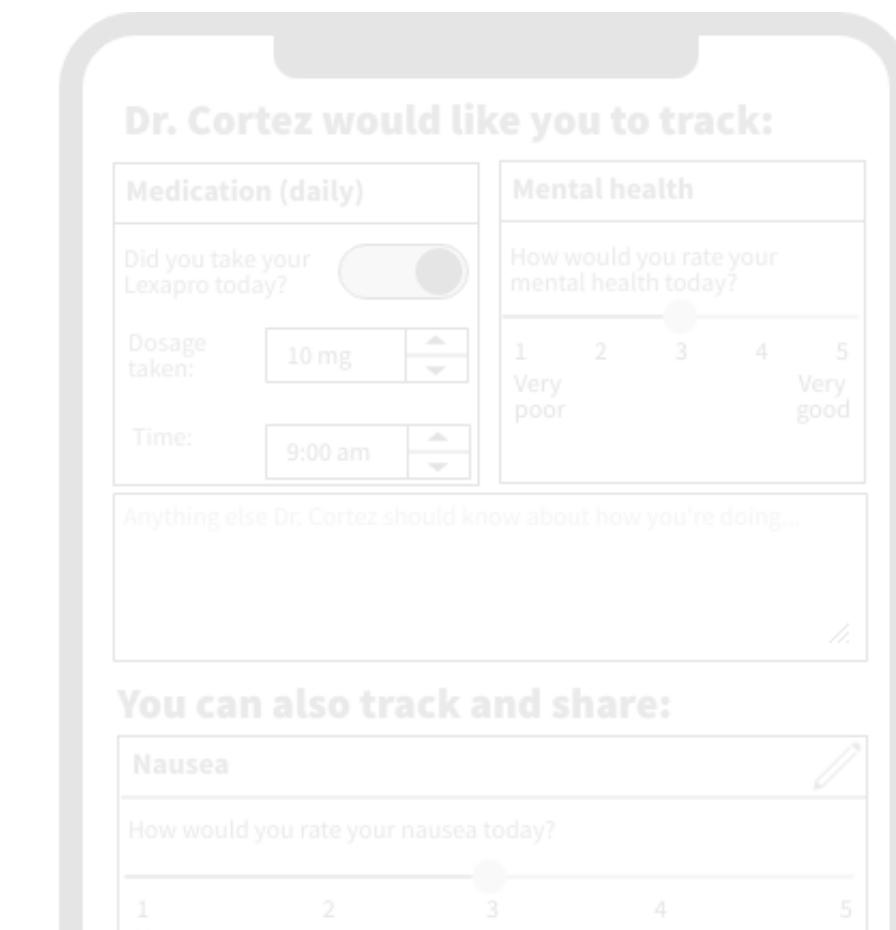
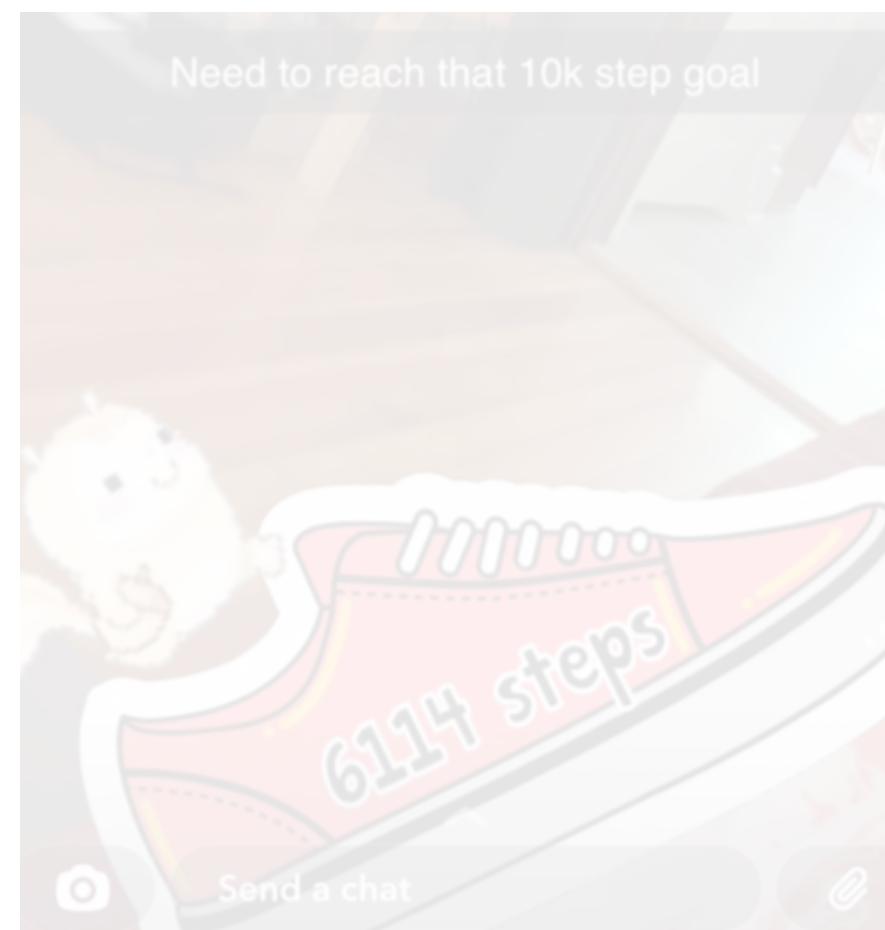
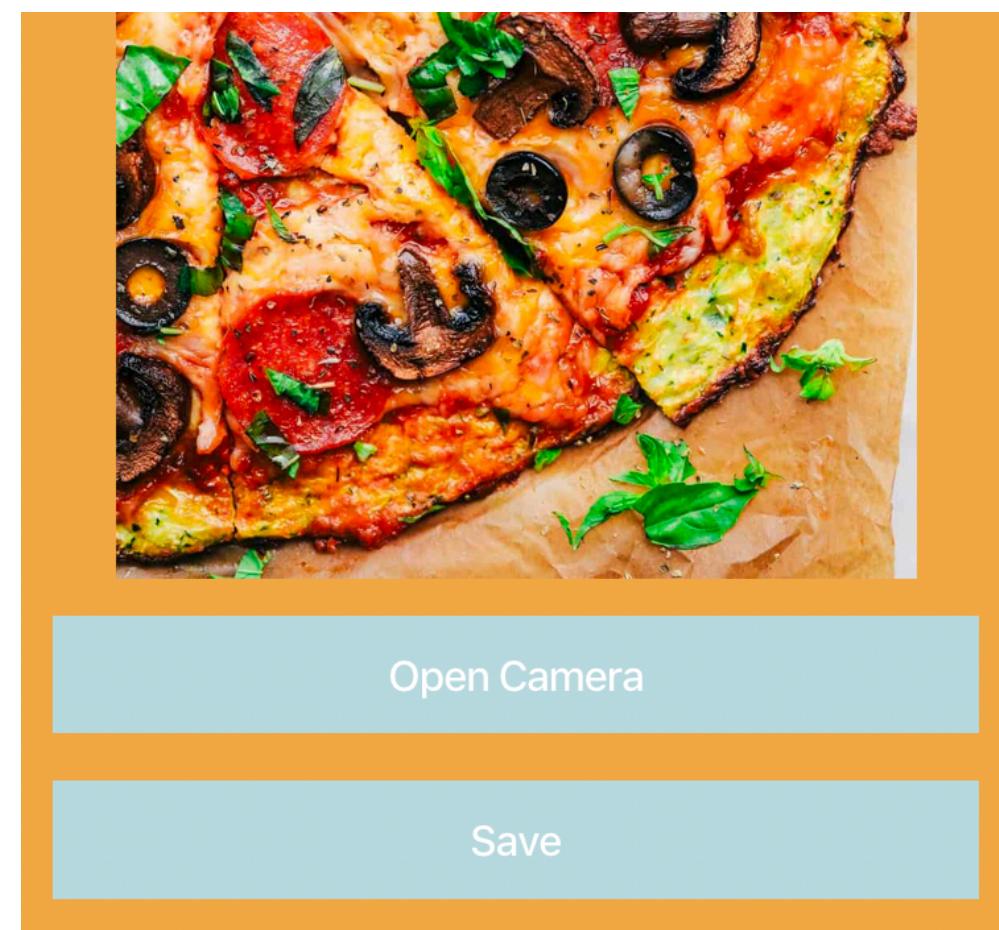


Multimodal and  
multi-device tracking

Tracking embedded  
in social technology

Bringing tracking  
to clinical settings

# Current research



Multimodal and  
multi-device tracking

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# Current research

Multimodal & multi-device food journaling

**Awareness** of what they ate

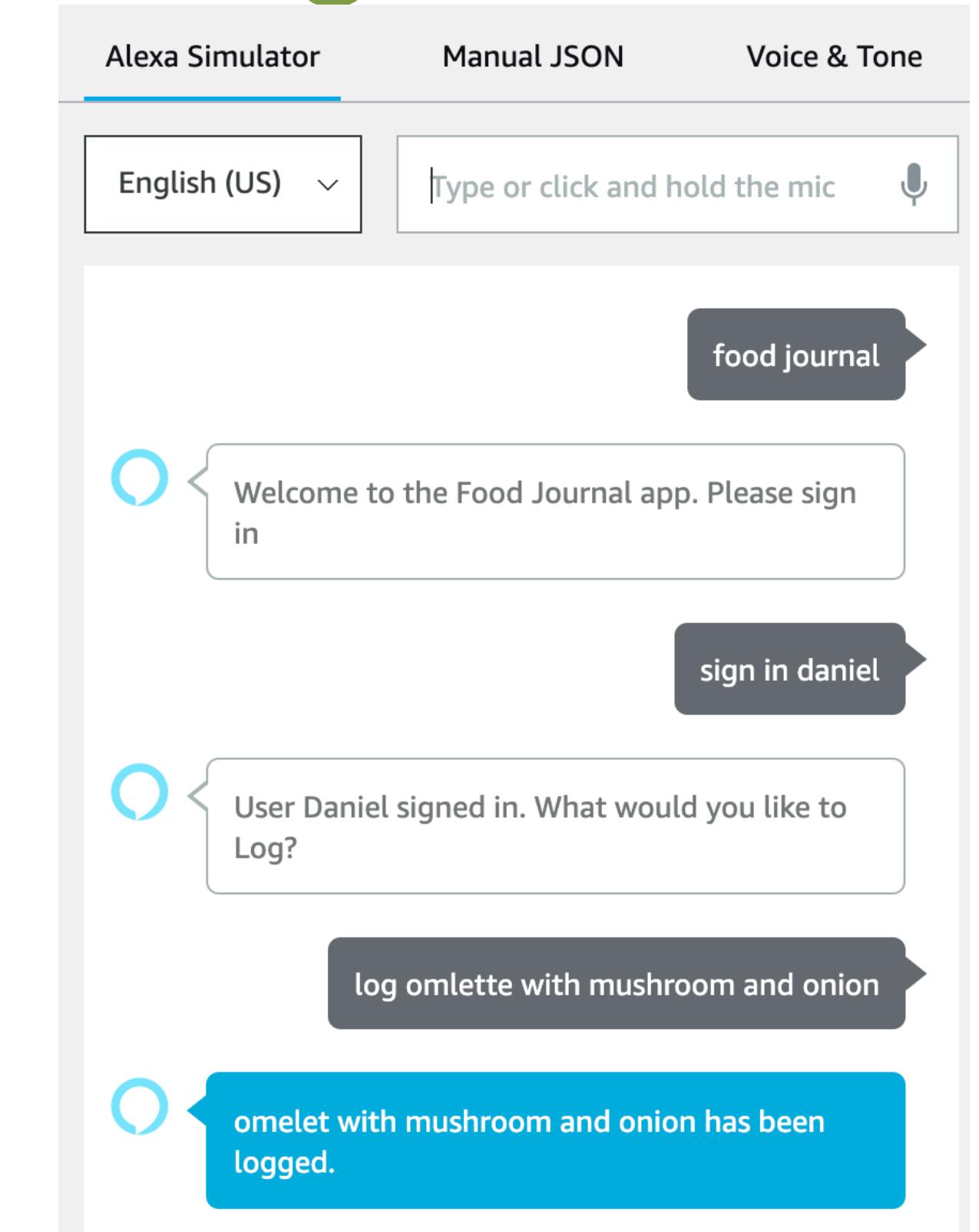
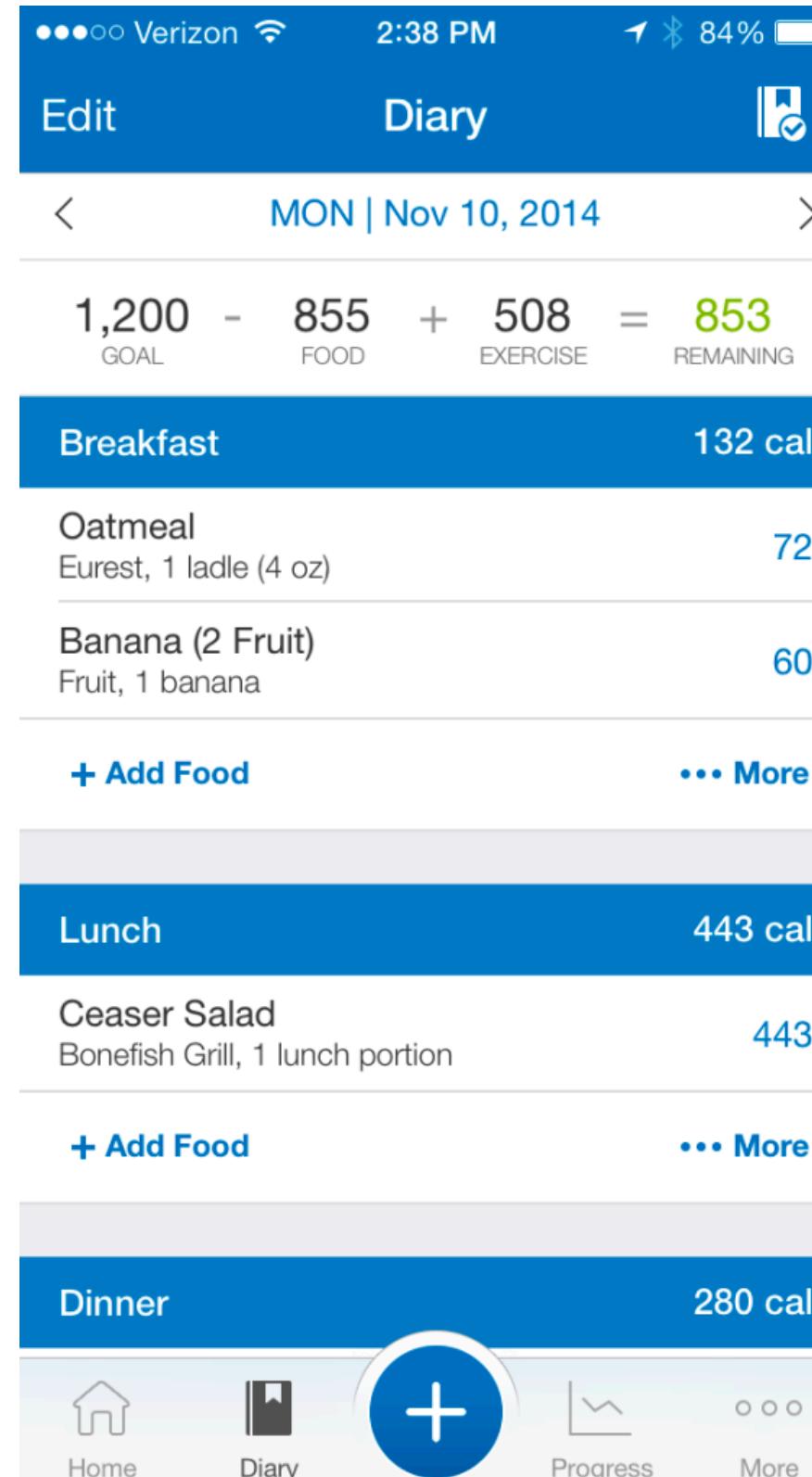
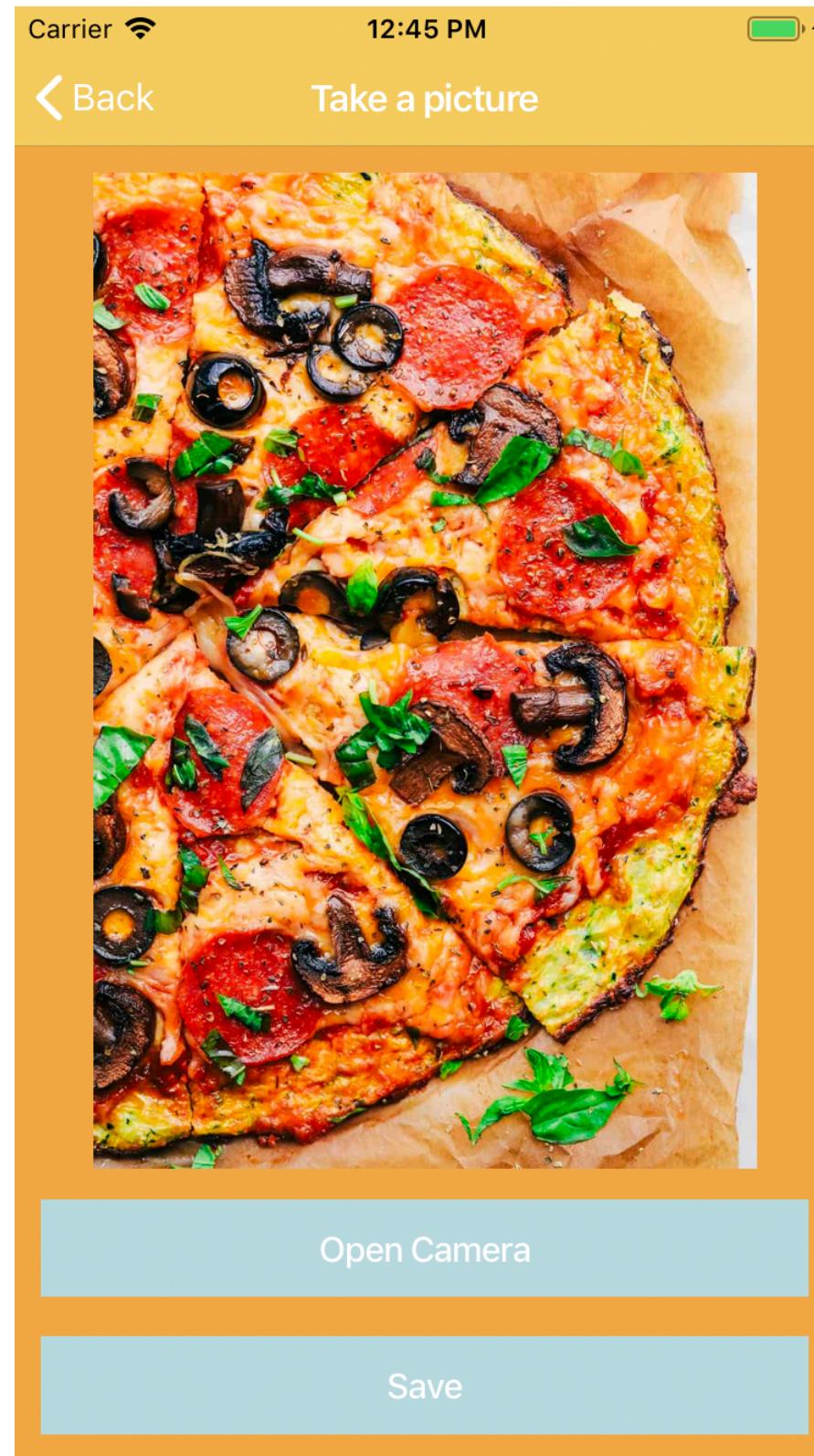
**Weight loss** or maintenance

**Diagnosis** of an intolerance or allergy

Silva, Ankrah, Huai, Epstein. Exploring Opportunities for Multimodality and Multiple Devices in Food Journaling.  
In preparation.

# Current research

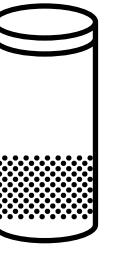
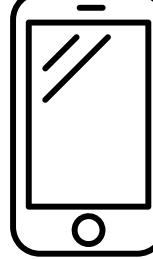
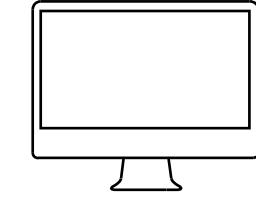
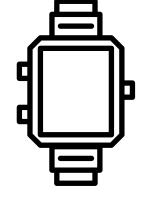
## Multimodal & multi-device food journaling



Silva, Ankrah, Huai, Epstein. Exploring Opportunities for Multimodality and Multiple Devices in Food Journaling. In preparation.

# Current research

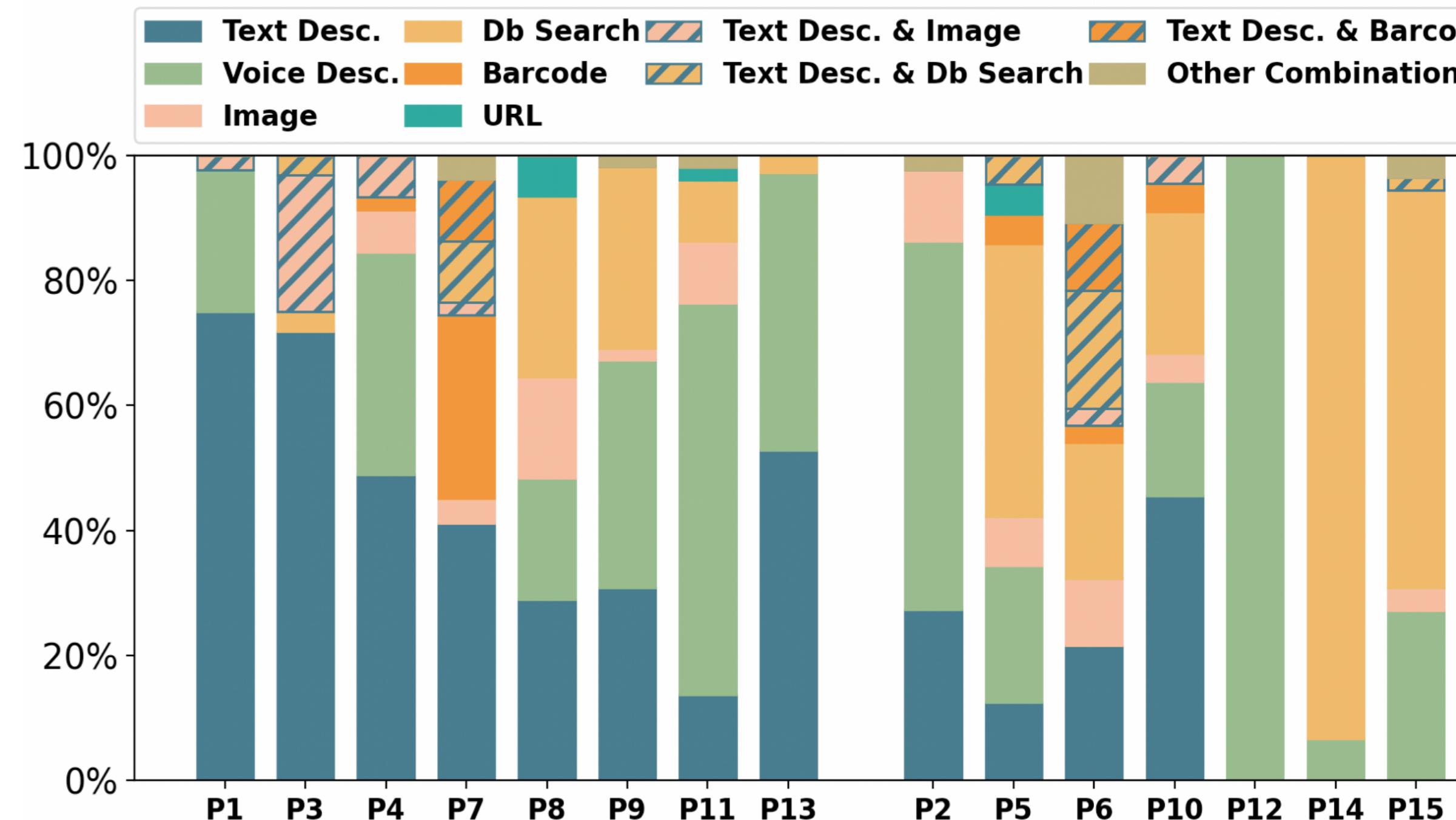
## Multimodal & multi-device food journaling

				
Speaker	✓			
Phone		✓		
Desktop			✓	
Watch				✓
Voice	✓			
Photo		✓		
Barcode		✓		
Text description		✓		
Database lookup		✓		
Recipe link		✓		

Silva, Ankrah, Huai, Epstein. Exploring Opportunities for Multimodality and Multiple Devices in Food Journaling.  
In preparation.

# Current research

## Multimodal & multi-device food journaling



Awareness goals

Weight loss goals

Awareness: open-ended  
text descriptions

( $p<0.05$ , 95% CI 0.46-4.42x more often)

Weight loss: database searches

( $p=0.07$ , 95% CI 0.38x less - 4.45x more often)

Silva, Ankrah, Huai, Epstein. Exploring Opportunities for Multimodality and Multiple Devices in Food Journaling.  
In preparation.

# Current research

## Multimodal & multi-device food journaling

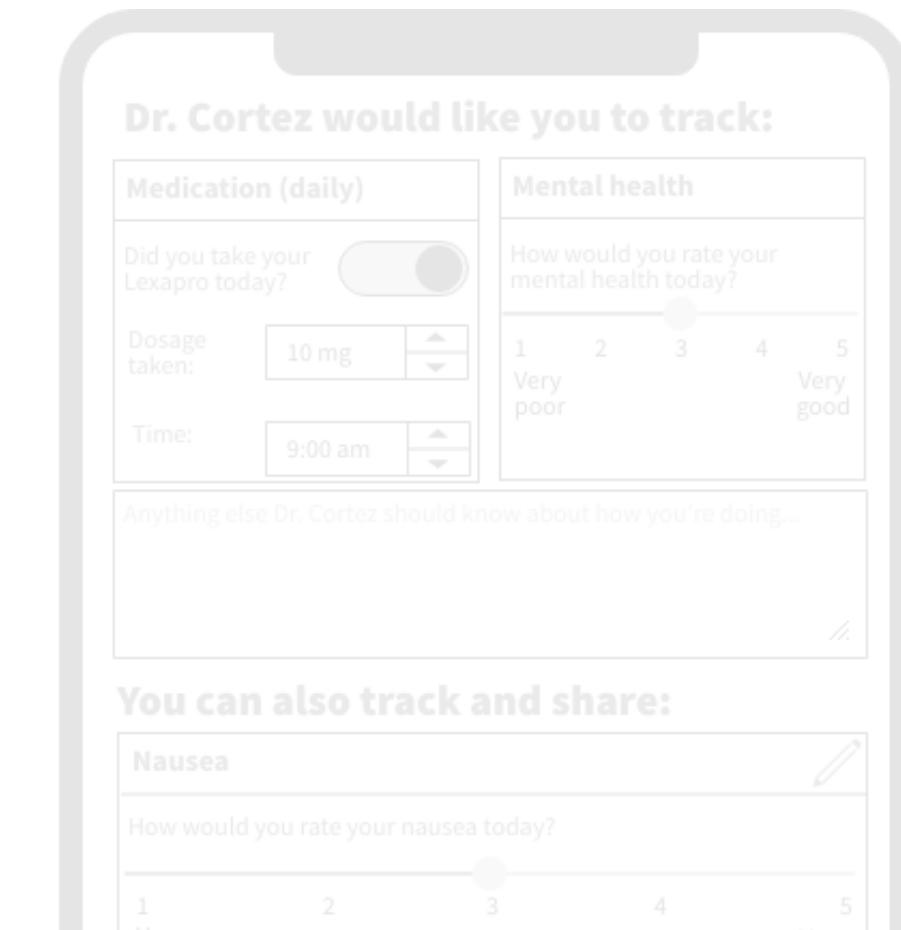
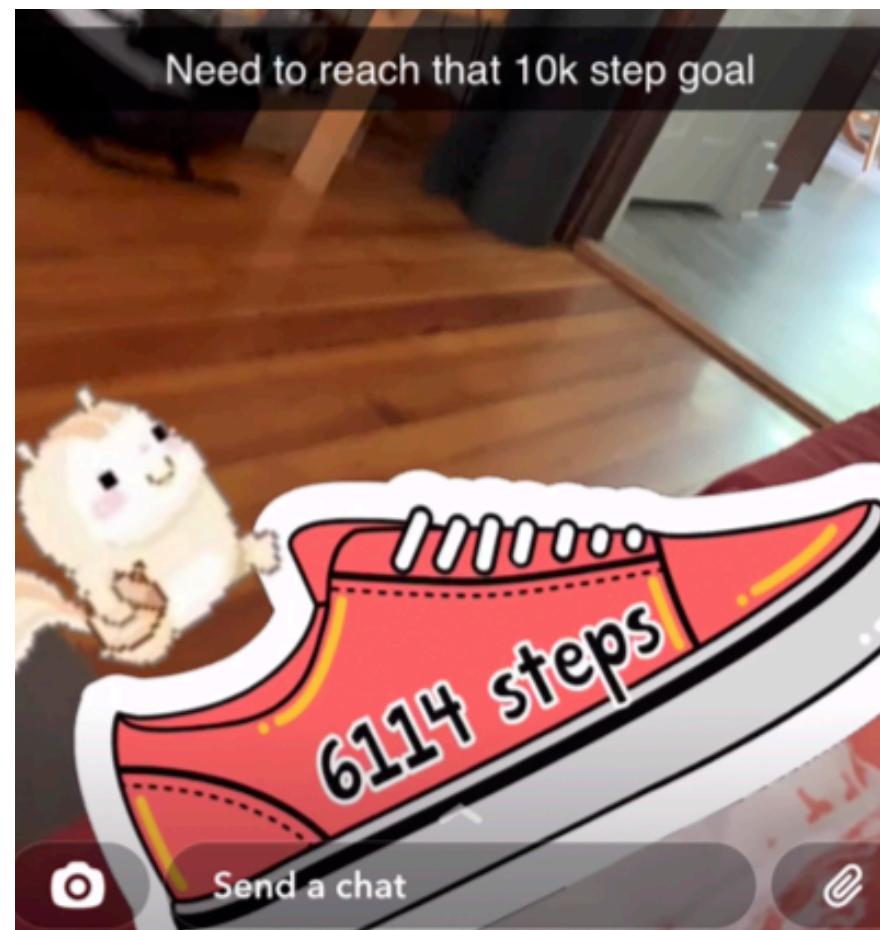
Availability “*Studying, doing something on my PC and I want something to eat, [...] so I might as well just start logging it*”

“*I would use it when I want to multitask. If it's available right there and I'm prepping or if I'm cooking, [...] so I'll be like, 'Alexa, journal blah blah blah'*”

Presence of others “*my family is a bunch of eavesdroppers and control freaks and I don't want them hearing what I'm doing*”

Silva, Ankrah, Huai, Epstein. Exploring Opportunities for Multimodality and Multiple Devices in Food Journaling.  
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# Current research



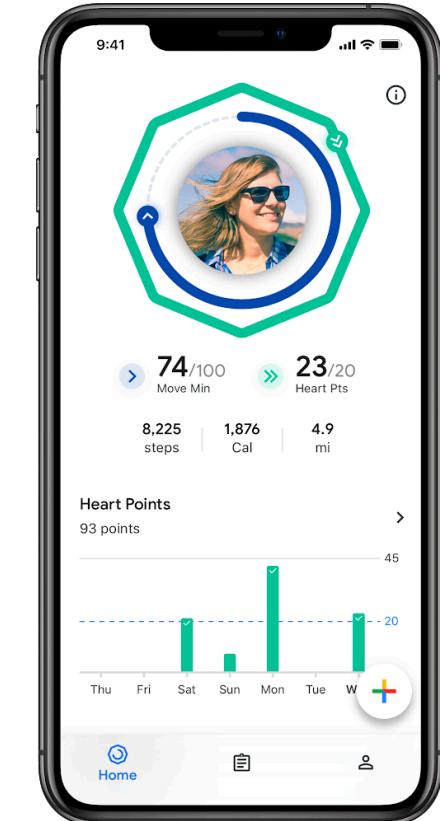
Multimodal and  
multi-device tracking

Tracking embedded  
in social technology

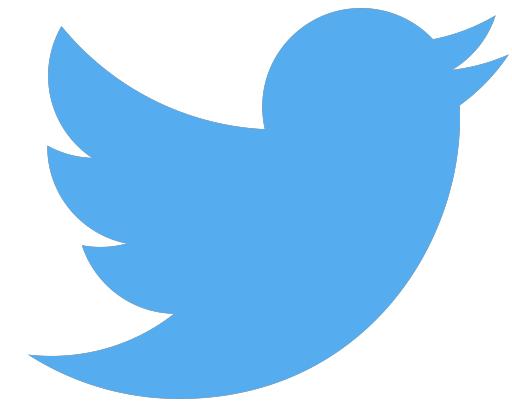
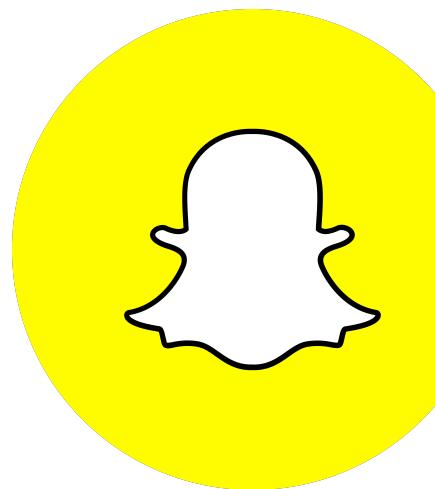
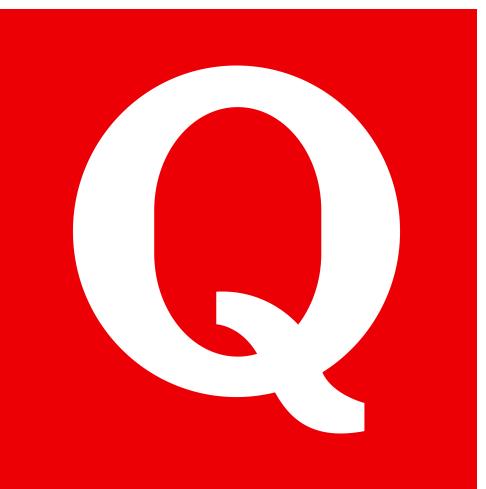
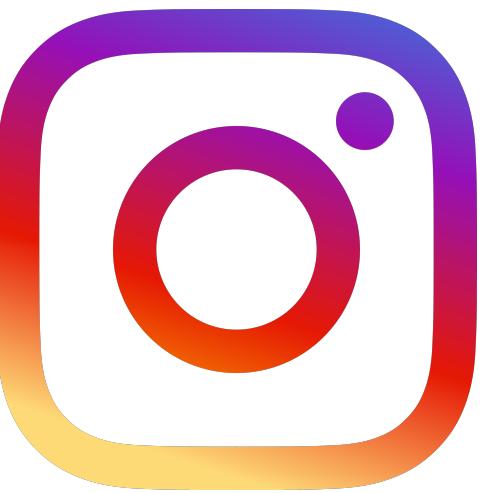
Bringing tracking  
to clinical settings

# Current research

## Tracking embedded in social technology



Tracking technology

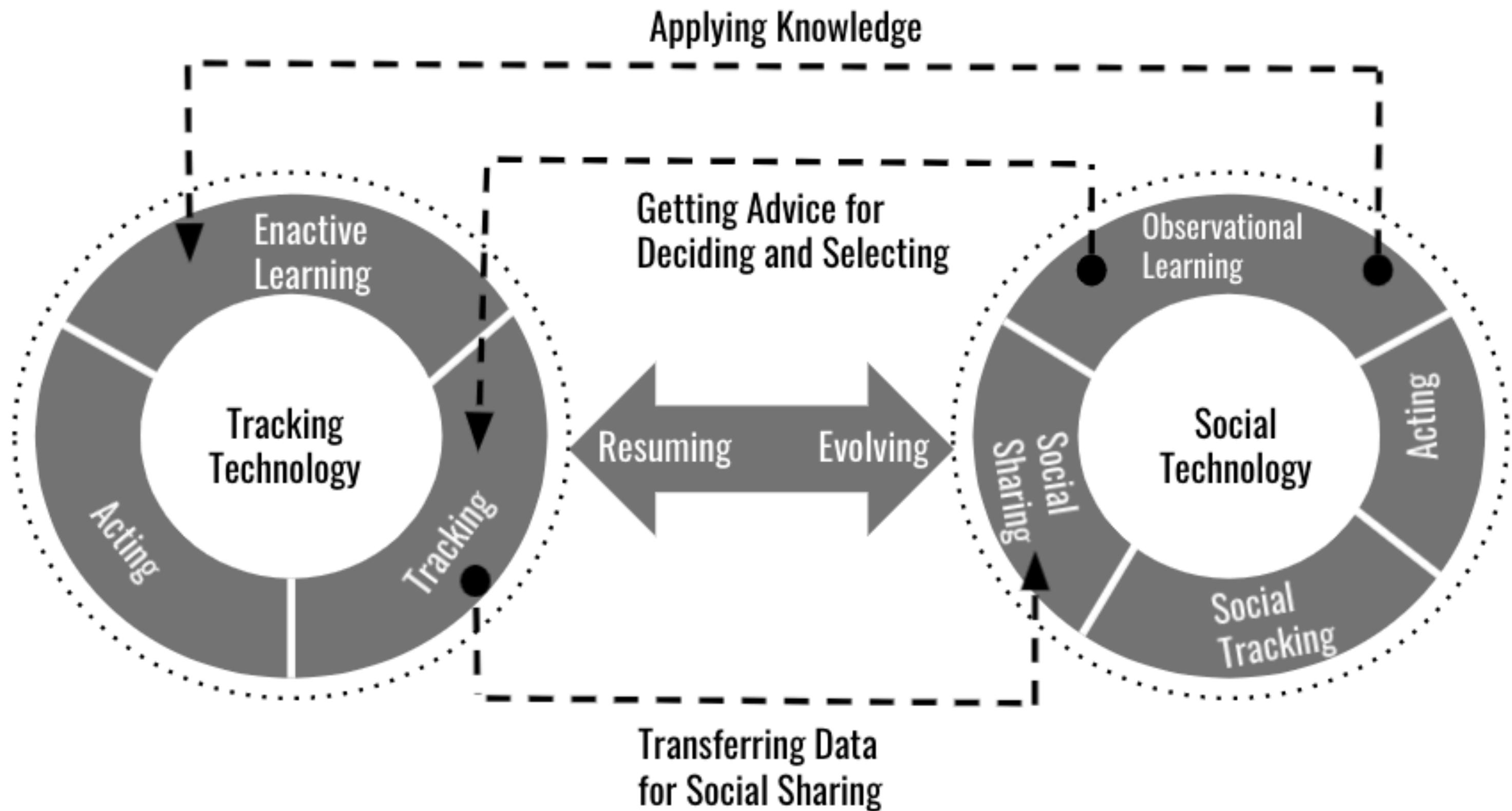


Social technology

Lu, Chen, Epstein. A Model of Socially Sustained Self-Tracking for Food and Diet.  
CSCW 2021.

# Current research

## Tracking embedded in social technology



Lu, Chen, Epstein. A Model of Socially Sustained Self-Tracking for Food and Diet.  
CSCW 2021.

# Current research

## Tracking embedded in social technology

- |  |   |
|--|---|
| Moving data from tracking to social            | <p><i>“When you say something publicly, you then must be persistent in it to not be discreditable. So [sharing] works as monitoring and encouragement.”</i></p>   |
| Transferring knowledge from social to tracking | <p><i>“When I first started losing weight [by the food journaling app], I valued my appearance a lot. Then, nutrition knowledge [learned on external social platforms] makes me realize that eating is as important as appearance. I more and more realize the importance of healthy eating.”</i></p> |

Lu, Chen, Epstein. A Model of Socially Sustained Self-Tracking for Food and Diet.  
CSCW 2021.

# Current research

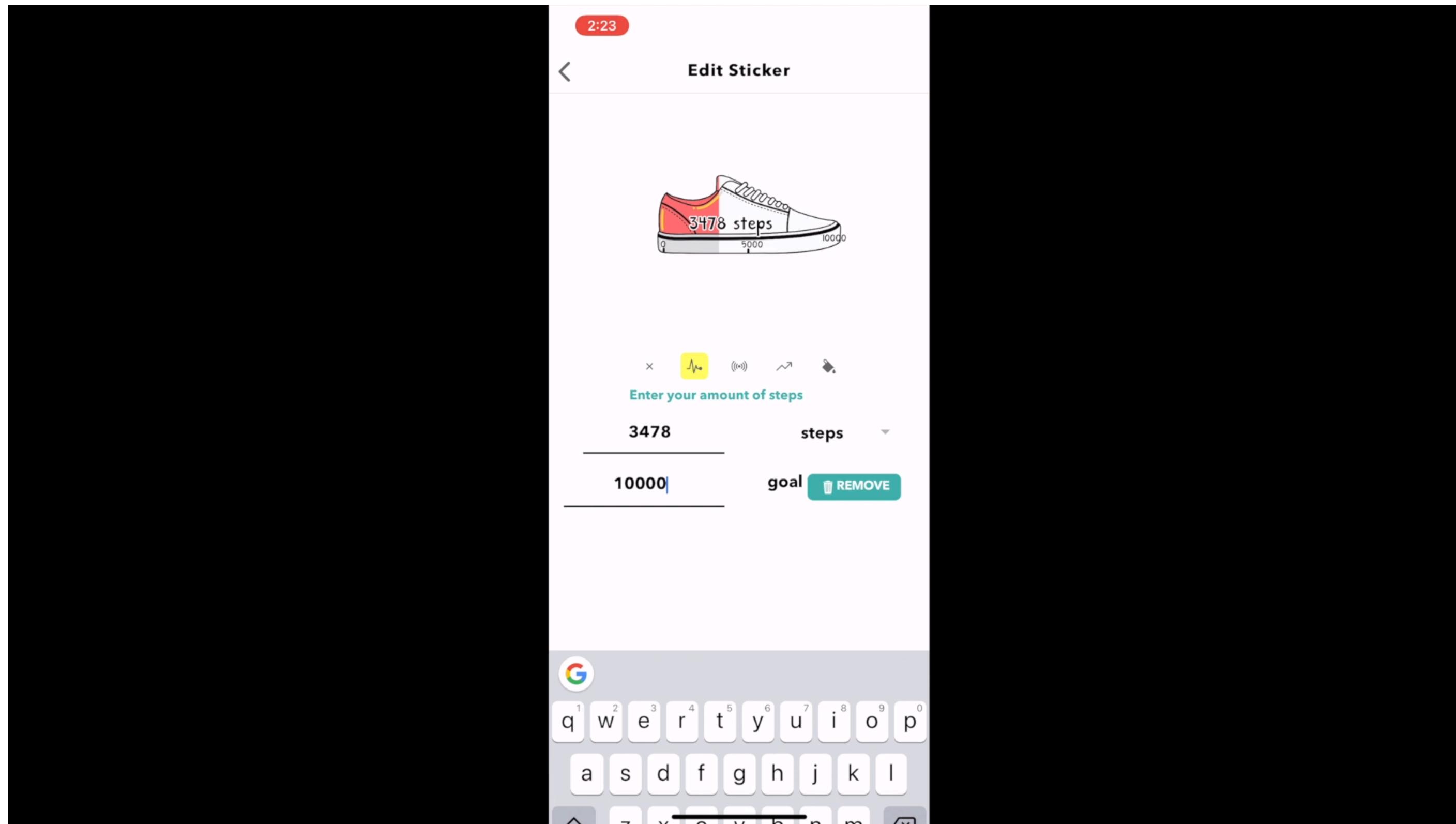
Tracking embedded in social technology

**Can we design technology which  
supports moving health tracking data  
to social technology?**

Wang, Chheang, Ji, Mohta, Epstein. SnapPI: Authoring and Sharing Personal Informatics Data Stickers on Ephemeral Social Media. Under review.

# Current research

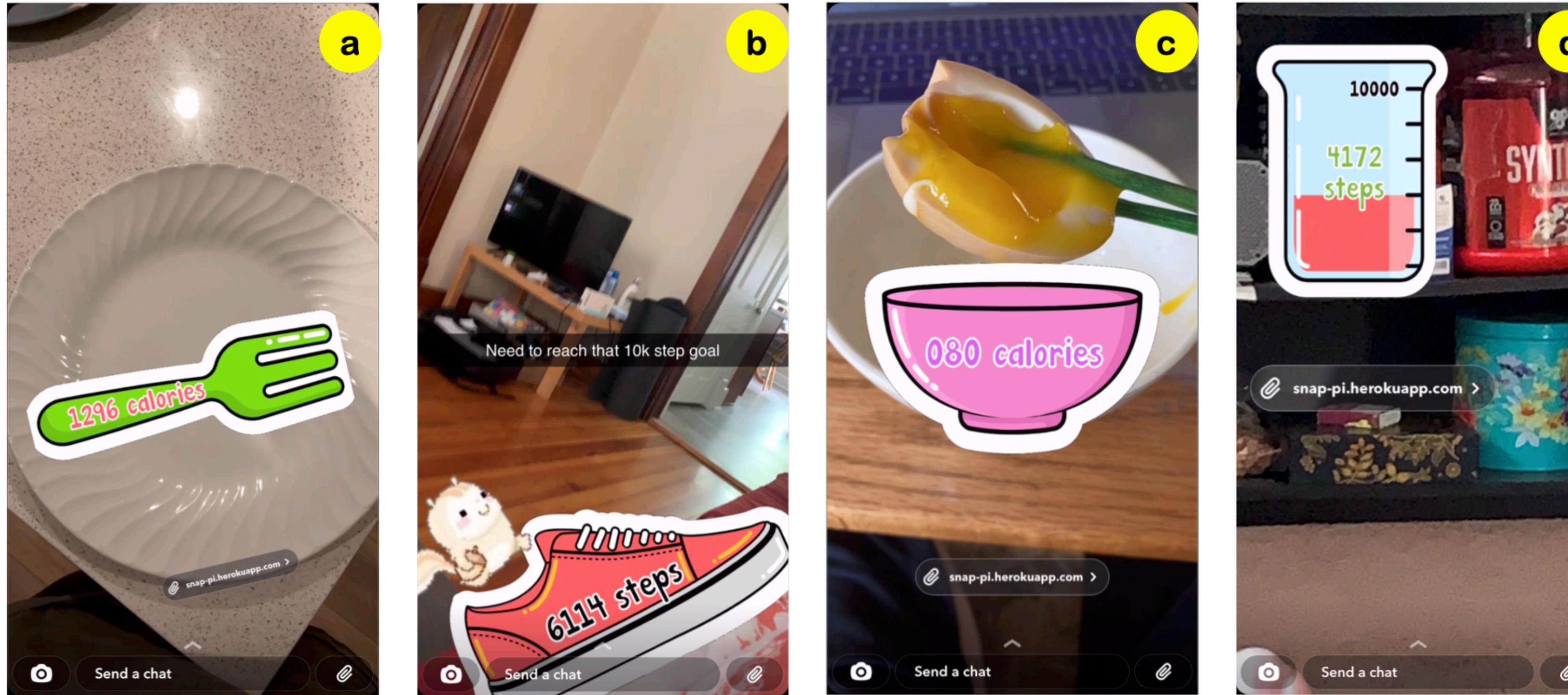
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# Current research

## Tracking embedded in social technology



Wang, Chheang, Ji, Mohta, Epstein. SnapPI: Authoring and Sharing Personal Informatics Data Stickers on Ephemeral Social Media. Under review.

# Current research

## Tracking embedded in social technology

Have playful engagements around health data

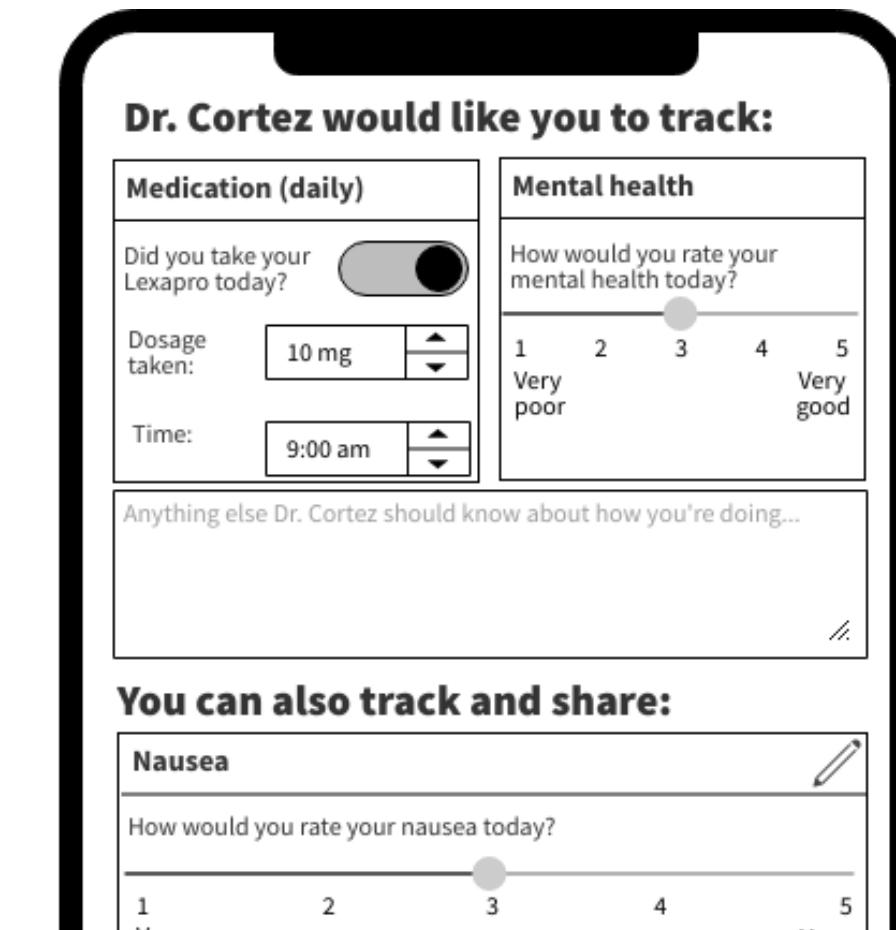
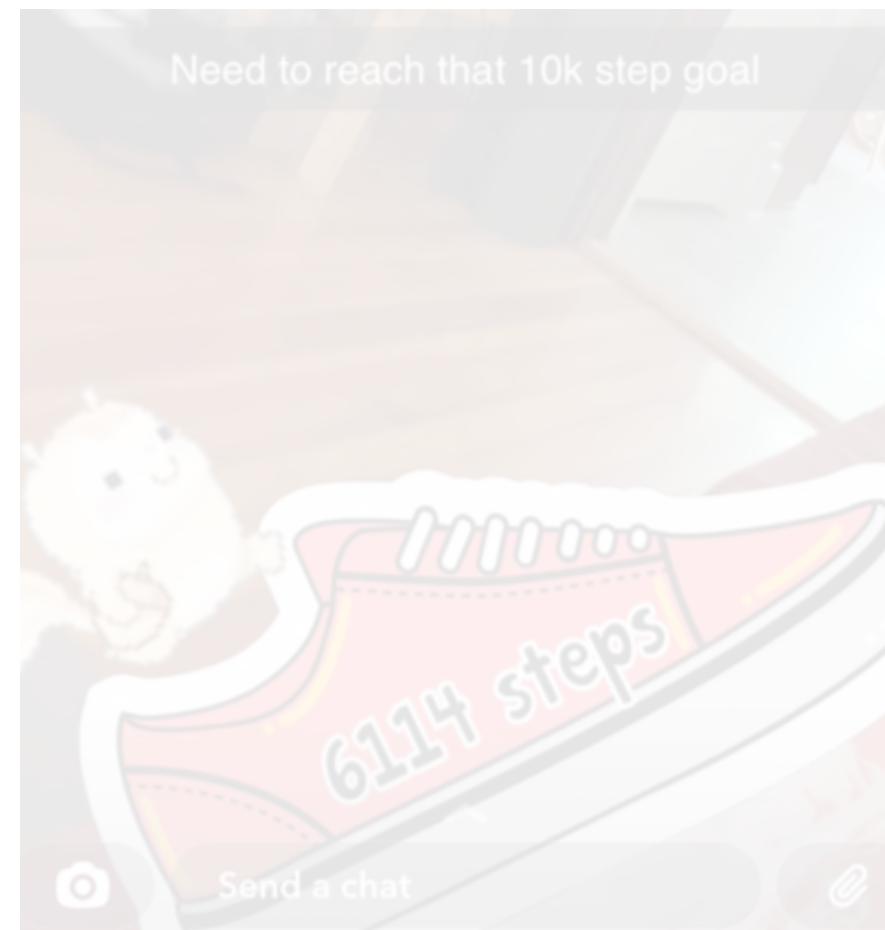
*“I have some friends on another app, MyFitnessPal, where you track your calories, so they see that, but again, it’s numbers [...], it’s not as interactive or interesting to see. And Snapchat it’s sort of, I’m sending them Snaps anyway.”*

Supported connection around health

*“So with these stickers, they start a point of conversation, I think [...], if I went on a walk, and I use this sticker, my friend would ask me, [...] stuff like, ‘Where did you take the walk?’ Or like, ‘Oh, good, that you took the walk’”*

Wang, Chheang, Ji, Mohta, Epstein. SnapPI: Authoring and Sharing Personal Informatics Data Stickers on Ephemeral Social Media. Under review.

# Current research



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to clinical settings

# Current research

## Bringing tracking to clinical settings

Standard 10% taper Enter data in green cells below		cycle	dose	start date	% of start dose
starting date	9/15/2020	start	50.00	9/15/2020	100.00%
starting dose (see note)	50	1	45.00	10/13/2020	90.00%
reduction cycle (days)	28	2	40.50	11/10/2020	81.00%
% cut	10	3	36.45	12/8/2020	72.90%
		4	32.81	1/5/2021	65.61%
		5	29.52	2/2/2021	59.05%
NOTES		6	26.57	3/2/2021	53.14%
(1) If your starting dose is less than 0.5 mg, you may prefer using the "microdoses" tab.		7	23.91	3/30/2021	47.83%
(2) Use North American style for decimals, Example: 5.6 or 112.7, not 5,6 or 112,7		8	21.52	4/27/2021	43.05%
		9	19.37	5/25/2021	38.74%
		10	17.43	6/22/2021	34.87%
		11	15.69	7/20/2021	31.38%
		12	14.12	8/17/2021	28.24%
		13	12.71	9/14/2021	25.42%
		14	11.44	10/12/2021	22.88%

6 a.m. Woke with anxiety  
8 a.m. Took 2.5mg Lexapro  
10 a.m. Stomach is upset  
10:30 a.m. Ate breakfast  
11:35 a.m. Got a headache, lasted one hour  
12:35 p.m. Ate lunch  
4 p.m. Feel a bit better  
5 p.m. Took 2.5mg Lexapro  
6 p.m. Ate dinner  
9:20 p.m. Headache  
10:00 p.m. Took 50mg Seroquel  
10:20 p.m. Feeling dizzy  
10:30 p.m. Fell asleep  
2:30 a.m. Woke, took 3mg Ambien (NOT  
"took 1/2 tablet Ambien")  
2:45 a.m. Fell asleep  
4:30 a.m. Woke but got back to sleep

Papoutsaki, So, Kenderova, Shapiro, Epstein. Understanding Delivery of Collectively Built Protocols in an Online Health Community for Discontinuation of Psychiatric Drugs. CSCW 2021.

Jo, Ryu, Kenderova, So, Shapiro, Papoutsaki, Epstein. Designing Flexible Longitudinal Regimens: Supporting Clinician Planning for Discontinuation of Psychiatric Drugs. CHI 2022.

# Current research

## Bringing tracking to clinical settings

Providers  
don't have  
time to  
review data

*"If you have a 20-minute appointment [...] then you don't have a lot of time to do face-to-face time with patients."*

Distrust of  
patient-driven  
health tracking

*"Problem is at the beginning I went way too fast (On my idiot doctor's recommendation, of course). That's what put me where you are right now."*

Papoutsaki, So, Kenderova, Shapiro, Epstein. Understanding Delivery of Collectively Built Protocols in an Online Health Community for Discontinuation of Psychiatric Drugs. CSCW 2021.

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# Current research

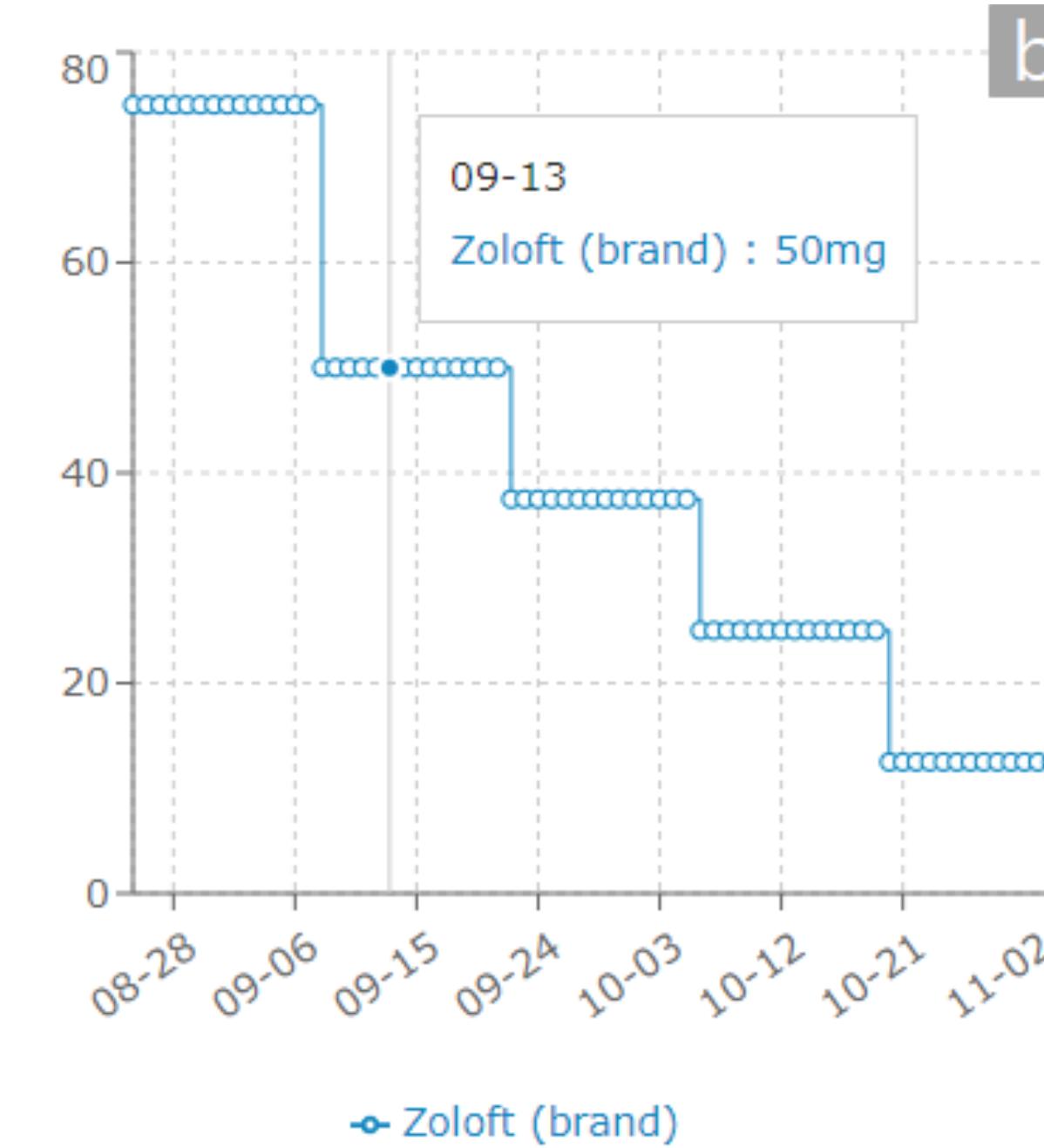
## Bringing tracking to clinical settings

**Prescribe**

Projected Schedule based on the rates of reduction you specified.

Check all the rows that you would like to prescribe.

Medication	Dosage	Start Date	End Date
Zoloft (brand)	100 mg	08/25/2021	
<input checked="" type="checkbox"/> Zoloft (brand)	75 mg	08/25/2021	09/07/2021
<input checked="" type="checkbox"/> Zoloft (brand)	50 mg	09/08/2021	09/21/2021
<input checked="" type="checkbox"/> Zoloft (brand)	37.5 mg	09/22/2021	10/05/2021
<input type="checkbox"/> Zoloft (brand)	25 mg	10/06/2021	10/19/2021
<input type="checkbox"/> Zoloft (brand)	12.5 mg	10/20/2021	11/02/2021



**Dr. Cortez would like you to track:**

Medication (daily)	Mental health
Did you take your Lexapro today? <input checked="" type="checkbox"/>	How would you rate your mental health today? 1 Very poor    2    3    4    5 Very good
Dosage taken: 10 mg	
Time: 9:00 am	
Anything else Dr. Cortez should know about how you're doing...	

**You can also track and share:**

Nausea	<input type="checkbox"/>
How would you rate your nausea today?	1 Very mild    2    3    4    5 Very severe
Create a new field: Field name	
Free text	<input type="radio"/> Radio 1
Slider	<input type="radio"/> Radio 2
Numeric	Multiple choice

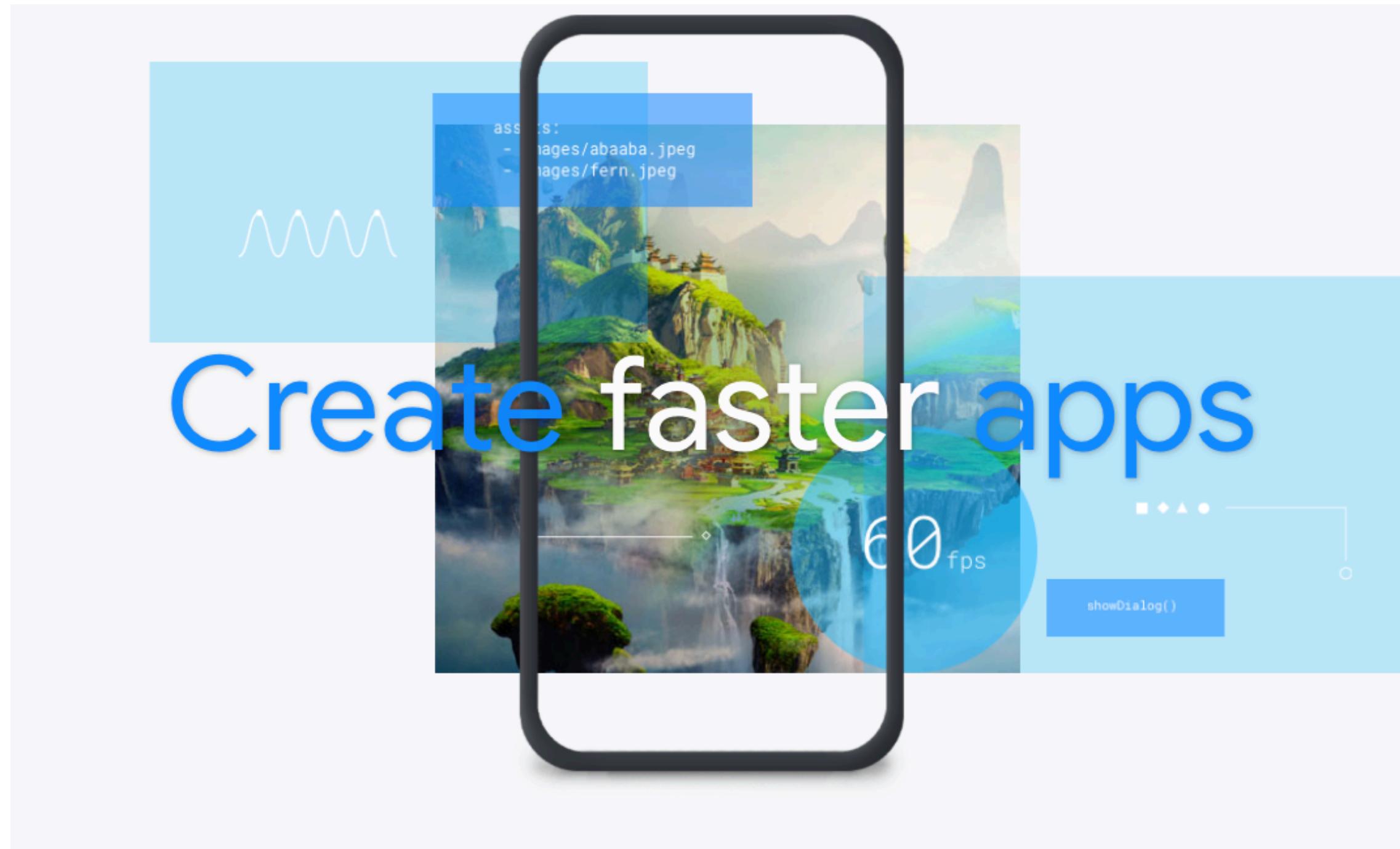
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Jo, Ryu, Kenderova, So, Shapiro, Papoutsaki, Epstein. Designing Flexible Longitudinal Regimens: Supporting Clinician Planning for Discontinuation of Psychiatric Drugs. CHI 2022.

# Reflecting on 133

Technology changes quickly

# Technology changes quickly



Made by [Google](#)

Flutter is Google's UI toolkit for building beautiful, natively compiled applications for [mobile](#), [web](#), and [desktop](#) from a single codebase.

[Get started](#)

[Watch video](#)

<https://flutter.dev/>

# **Take away messages from the course**

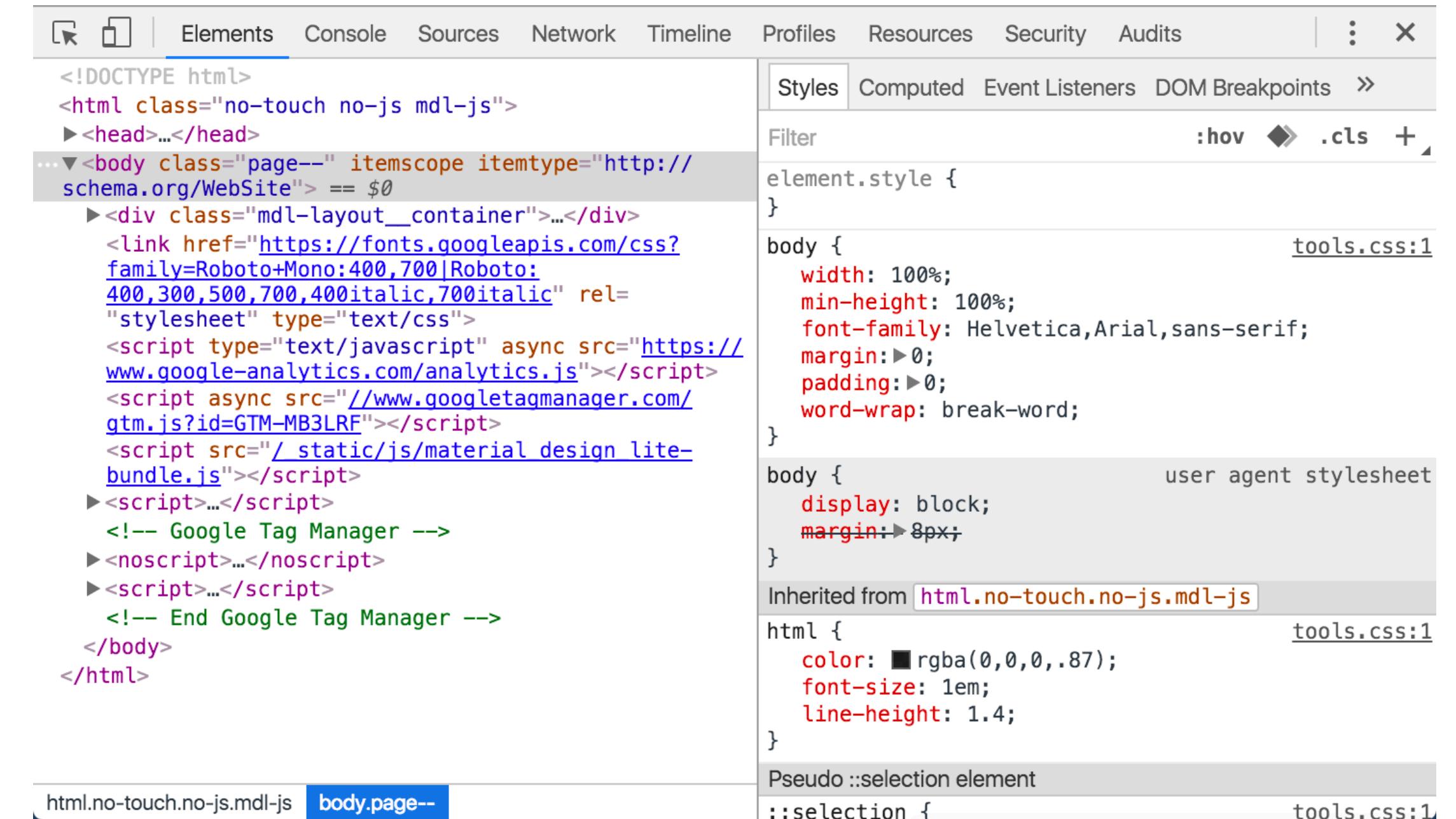
# Search before you build

- Do not reinvent the wheel!
- Use interfaces, algorithms, animations, etc. that have been created by other people



# Build by example

- Learn from others
- Read source code on webpages, GitHub, StackOverflow
- Use the element inspector in your browser to see someone's design or implementation



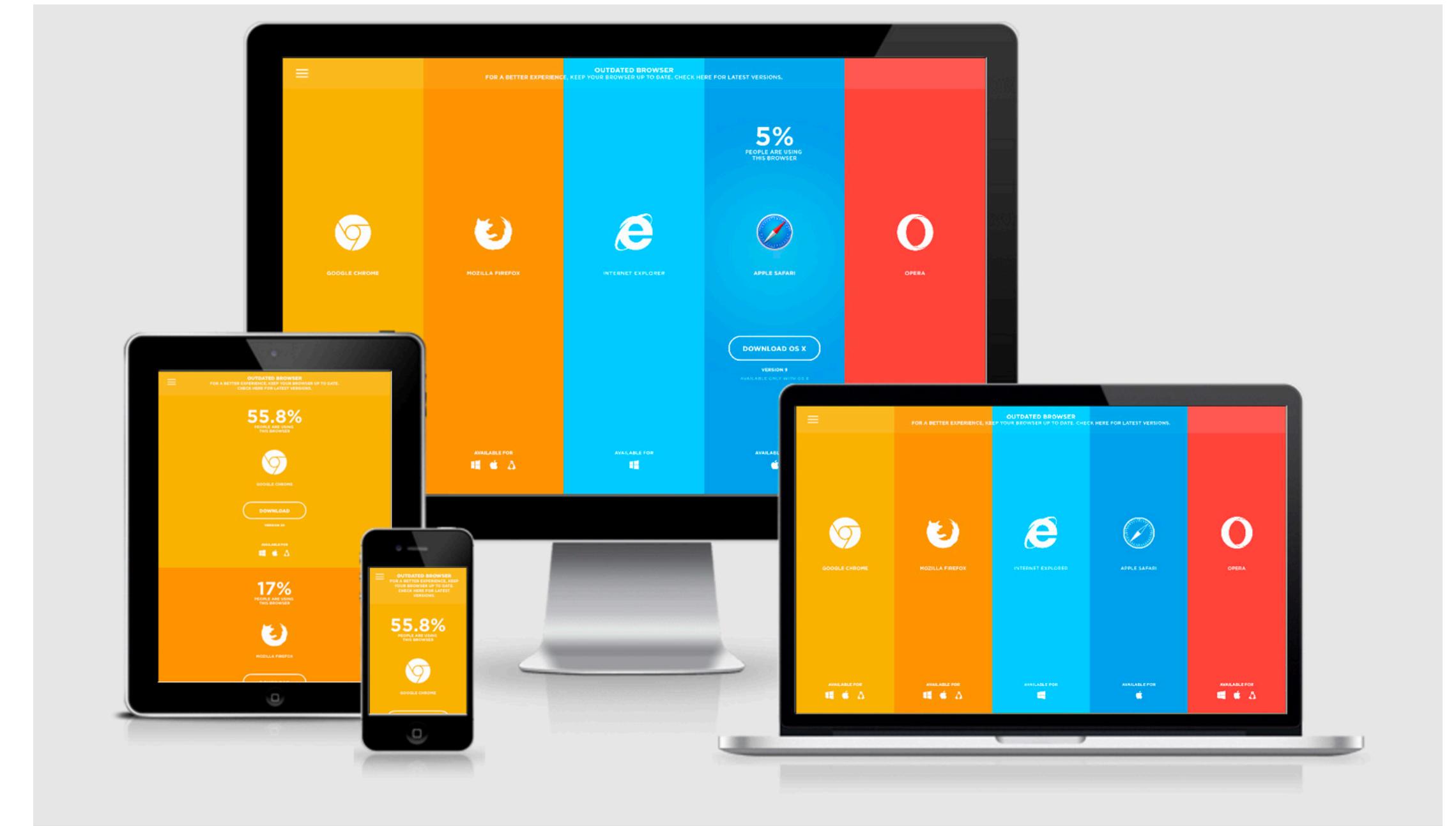
The screenshot shows the 'Elements' tab of a browser's developer tools. A specific body element is selected in the DOM tree. The right panel displays the CSS styles applied to this element, categorized into 'element.style', 'body', 'user agent stylesheet', and 'Inherited from html.no-touch.no-js.mdl-js'. The 'element.style' section contains a single rule: 'body { width: 100%; min-height: 100%; font-family: Helvetica, Arial, sans-serif; margin: 0; padding: 0; word-wrap: break-word; }'. The 'body' section contains rules for width, height, font-family, and margins/paddings. The 'user agent stylesheet' and 'Inherited from html.no-touch.no-js.mdl-js' sections also contain some basic styling rules.

```
<!DOCTYPE html>
<html class="no-touch no-js mdl-js">
  <head>...</head>
  ...<body class="page--" itemscope itemtype="http://schema.org/WebSite"> == $0
    <div class="mdl-layout__container">...</div>
    <link href="https://fonts.googleapis.com/css?family=Roboto+Mono:400,700|Roboto:400,300,500,700,400italic,700italic" rel="stylesheet" type="text/css">
    <script type="text/javascript" async src="https://www.google-analytics.com/analytics.js"></script>
    <script async src="//www.googletagmanager.com/gtm.js?id=GTM-MB3LRF"></script>
    <script src="/static/js/material_design_lite_bundle.js"></script>
    <script>...</script>
    <!-- Google Tag Manager -->
    <noscript>...</noscript>
    <script>...</script>
    <!-- End Google Tag Manager -->
  </body>
</html>
```

html.no-touch.no-js.mdl-js    body.page--

# Build for accessibility

- Keep in mind who you are designing for!
- Make sure your app works for:
  - All users
  - All browsers
  - All devices



# Build with caution

- Use version control!
- Test while you build
- Iteratively refine and debug



# Build on a solid foundation

- A new framework will come out next year
  - Or next month or next week
- But some fundamental principles unite them all
  - Separating interface from data and interaction, for example

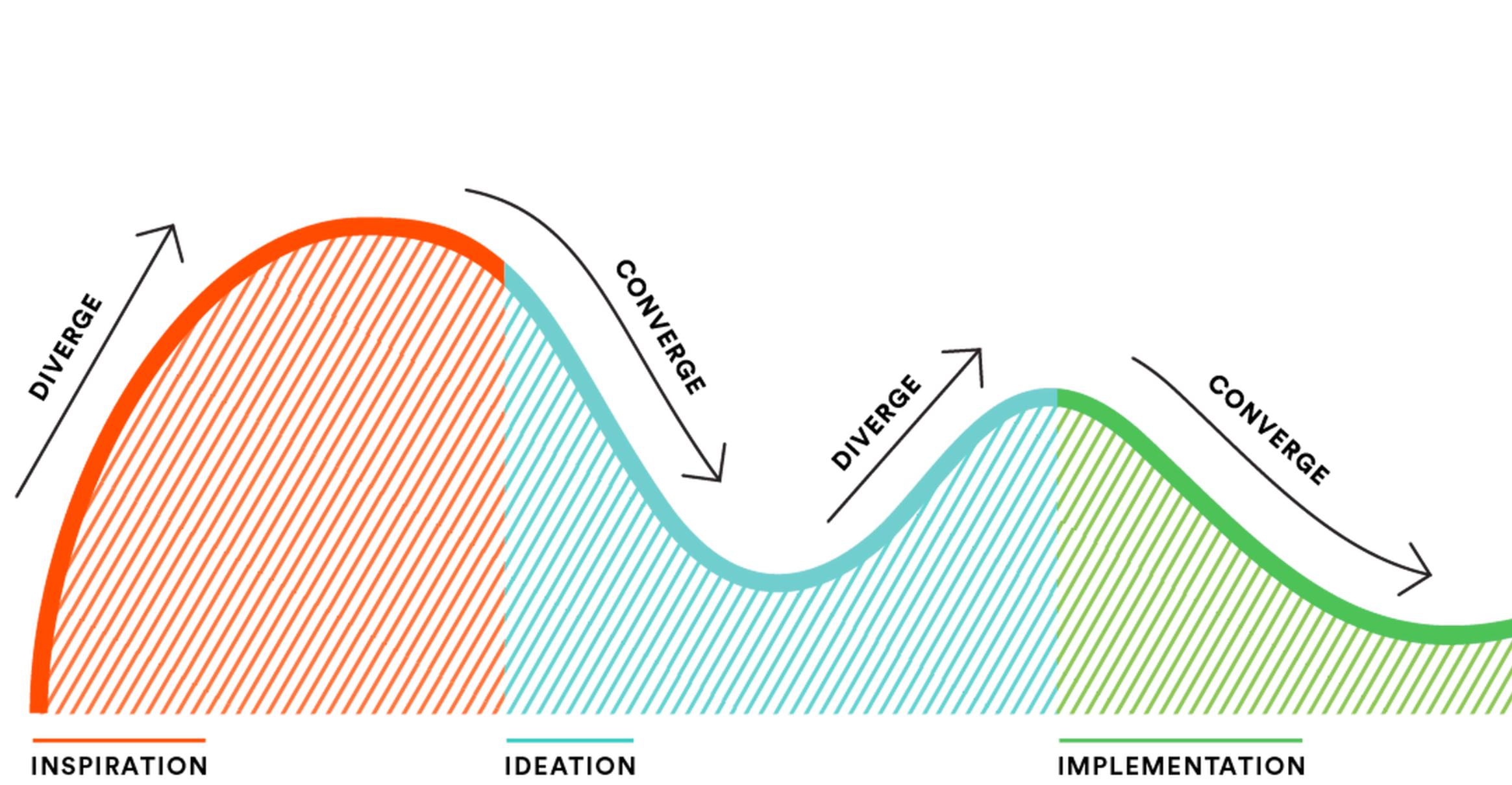


# Take away messages

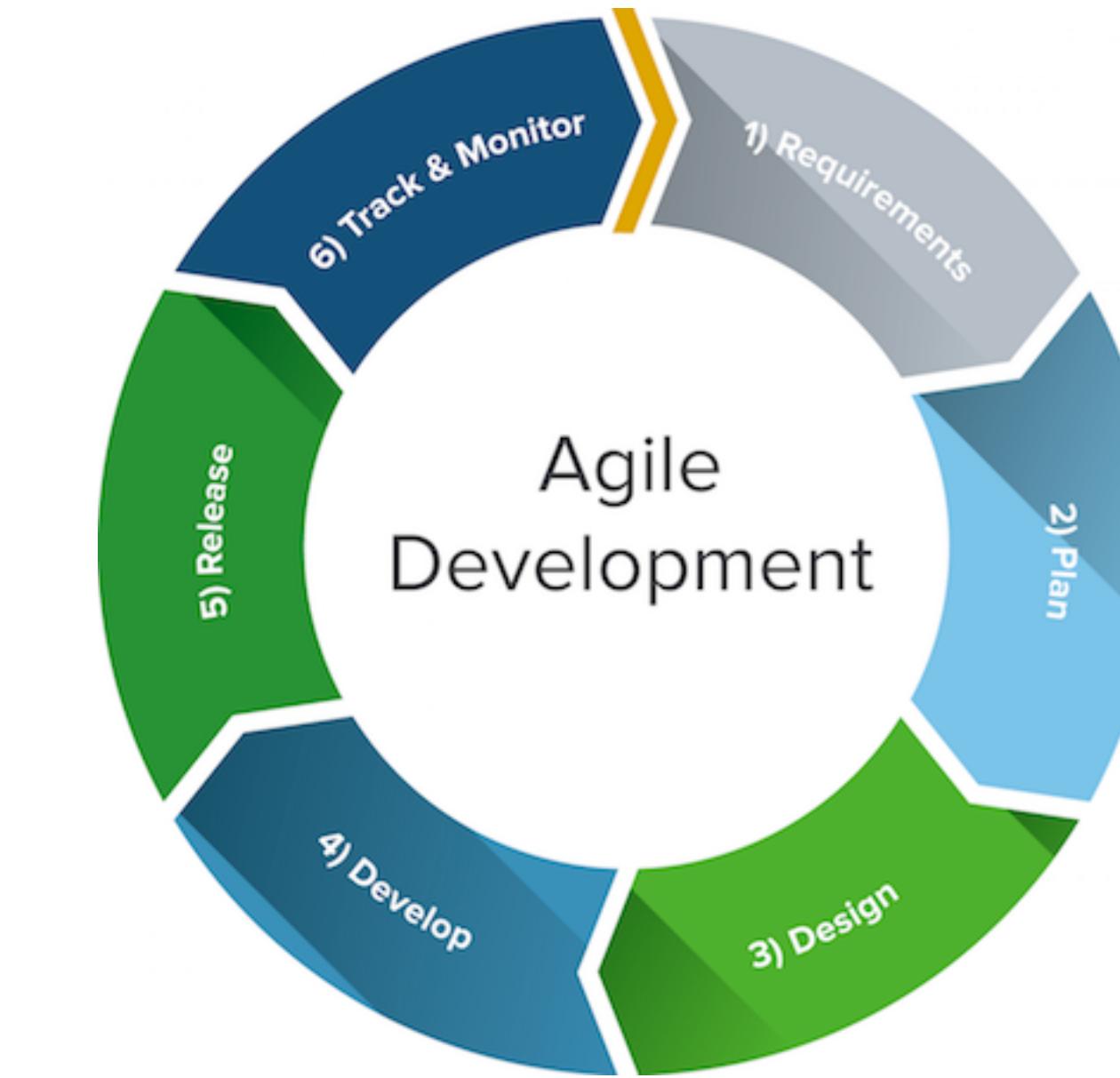
- Search before you build
- Build by example
- Build for accessibility
- Build with caution
- Build on a solid foundation

# **Applying this course in practice**

# Product design process

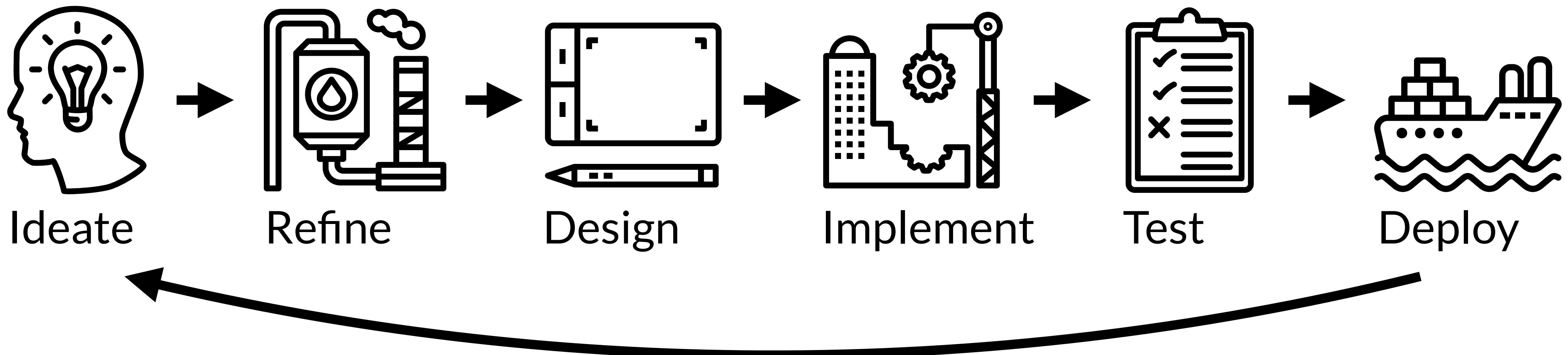


Human-Centered Design, IDEO



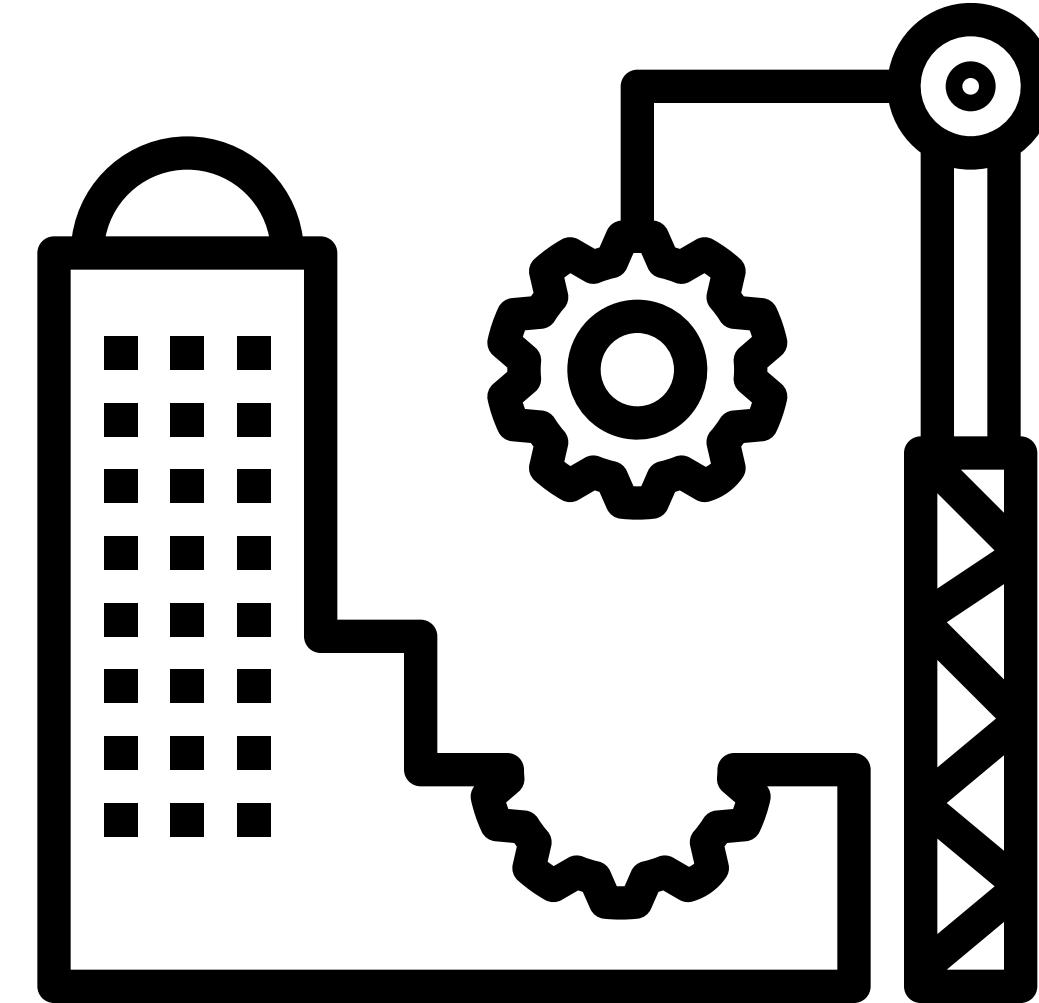
Agile Development, Agile Manifesto

# Product design process, simplified



# User interface implementation

- Has the power to turn ideas into reality
- Often dictates design decisions and timelines, for better or for worse
- Either you will be implementing, or you will need to communicate with your colleagues who are



**What job might you get  
when you graduate?**

# Some job options

- User experience designer
- User experience researcher
- Front-end software engineer
- Back-end software engineer
- Academic researcher (graduate student)
- Software consultant
- Something unrelated to technology
- ... others?

# If you're going into UX, you can now...

- Follow principles of web, mobile, AR design
  - Responsive design! Error prevention! Give clear instruction!
- Be conversational in web and mobile programming
  - Be able to understand what tasks are easy and what are hard
  - And understand when a developer is BSing you about how long something will take
- Style a webpage
  - Use CSS and SASS to change a design and even add animations

# Front-end software engineering...

- Build a webpage in plain HTML
  - Make it responsive with Bootstrap
- Use a framework to build a richer application
  - Angular for a web frontend
  - Ionic for a mobile frontend
- Style a webpage
  - Use CSS and SASS to change a design and even add animations

# Back-end software engineering...

- Build a web server
  - Allow it to respond to requests from a front-end interface
  - Allow it to make requests to APIs made by other developers
- Follow authentication and authorization protocols
  - Enable users to sign on
- Use a database
  - Data can persist between sessions

# Academic research...

- Explain some key problems in a couple of areas
  - Ubiquitous computing
  - Human performance
  - Conversational interfaces
  - Wearable computing
  - Augmented and virtual reality

# Software consultancy...

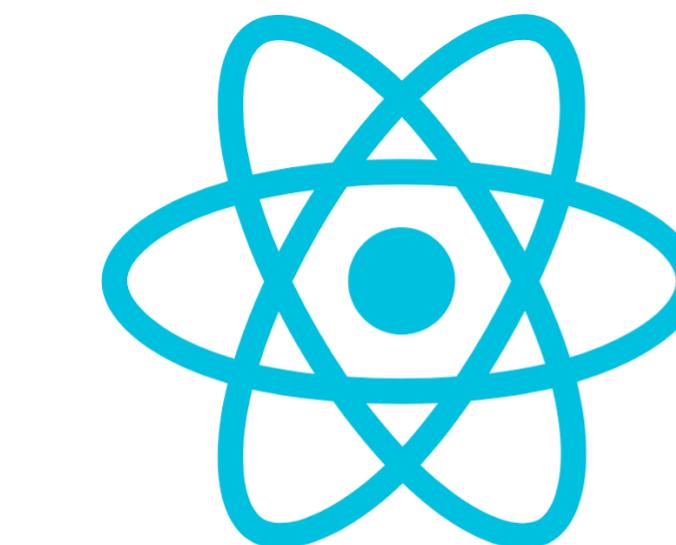
- Process and analyze data
  - Retrieve it from an API
  - Parse and process it to answer your question
- Visualize data
  - Use an appropriate tool for the task

# Something unrelated...

- Make a portfolio to show off your skills
  - Selling yourself is key
- Judge new devices and apps that come along
  - Is this solving a real problem?
  - Is this well designed?

# What is interface implementation today?

Often HTML, CSS, and JavaScript



React JS



Bootstrap



Vue.js



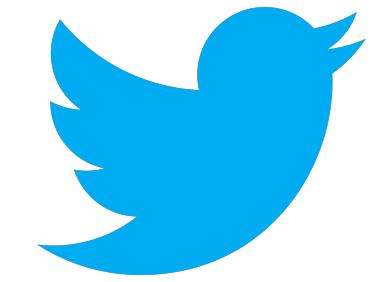
ionic  
ember

# Assignments

- A1: Personal web portfolio



- A2: Programming on the web



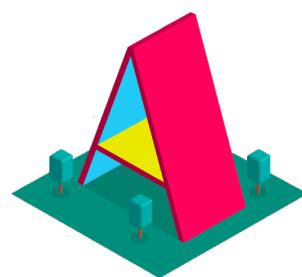
- A3: Web frameworks



- A4: Mobile development



- A5: Beyond Web & Mobile



# Other skills

- Git and GitHub
- Package management in npm
- SASS
- Visualization in Vega-Lite

# Question



What framework or language did you find the most challenging to pick up?

- A HTML and CSS
- B JavaScript and TypeScript
- C Angular
- D Ionic
- E Platforms beyond web & mobile

# Question



What framework or language did you find the most rewarding to learn to use?

- A HTML and CSS
- B JavaScript and TypeScript
- C Angular
- D Ionic
- E Platforms beyond web & mobile

# Congratulations!

- We said this class would be challenging
- You have risen to the challenge and worked hard (and still are)
- You have created impressive work as a result

**It's been an honor  
to be able to teach you.**

**I look forward to seeing  
what you do next!**

# Today's goals

By the end of today, you should be able to...

- Describe how concepts from IN4MATX 133 can integrate into research and practice
- Summarize what you learned in IN4MATX 133
- Describe the relevance of the topics to different disciplines in industry
- Fill out the course evaluation!

# **IN4MATX 133: User Interface Software**

**Lecture 20:**  
**Wrap-Up**

Professor Daniel A. Epstein  
TA Goda Addanki  
TA Seolha Lee