

Charting My CS Career Path:

From Wellesley to Industry and PhD



Hye Sun Yun
November 9, 2024

Introduction

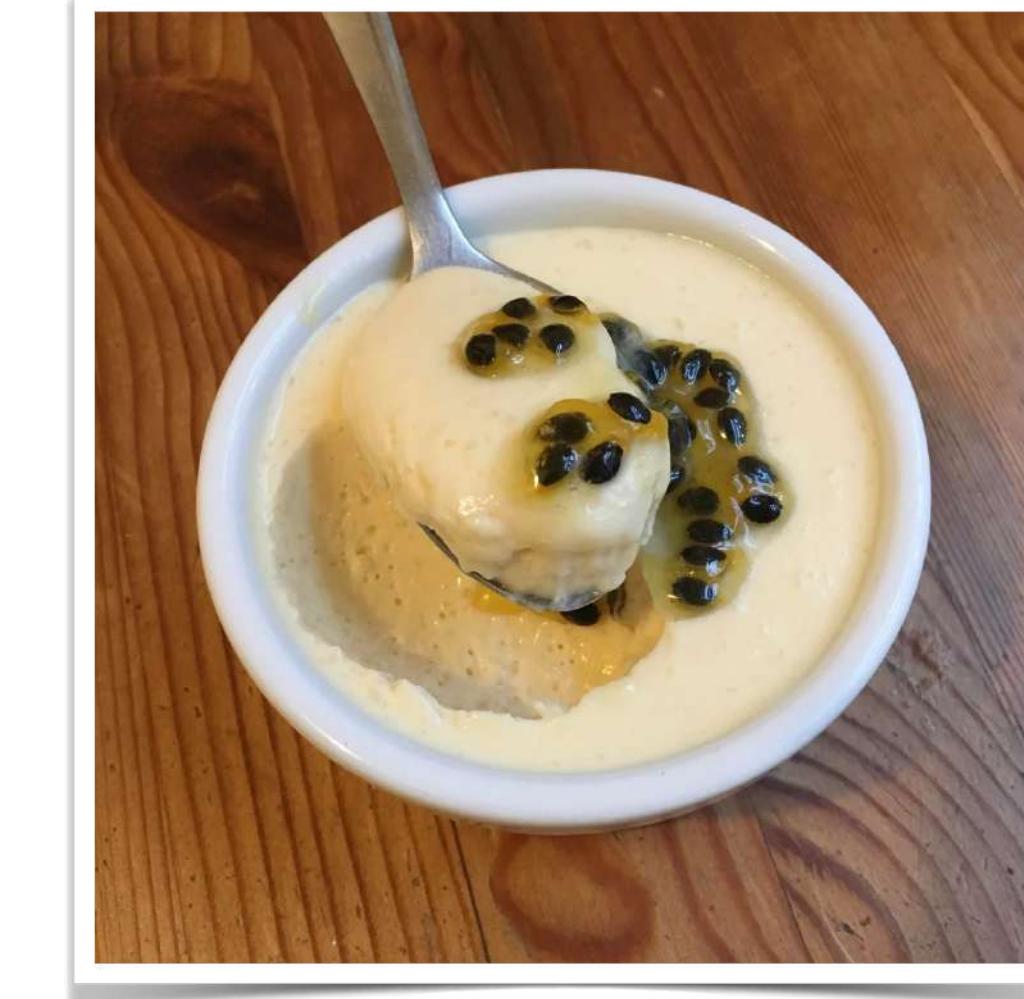
- Born in Seoul, South Korea
- Grew up in South Korea, South Africa, Botswana, & Los Angeles
- Boston-area for 10+ years



What I like to do?



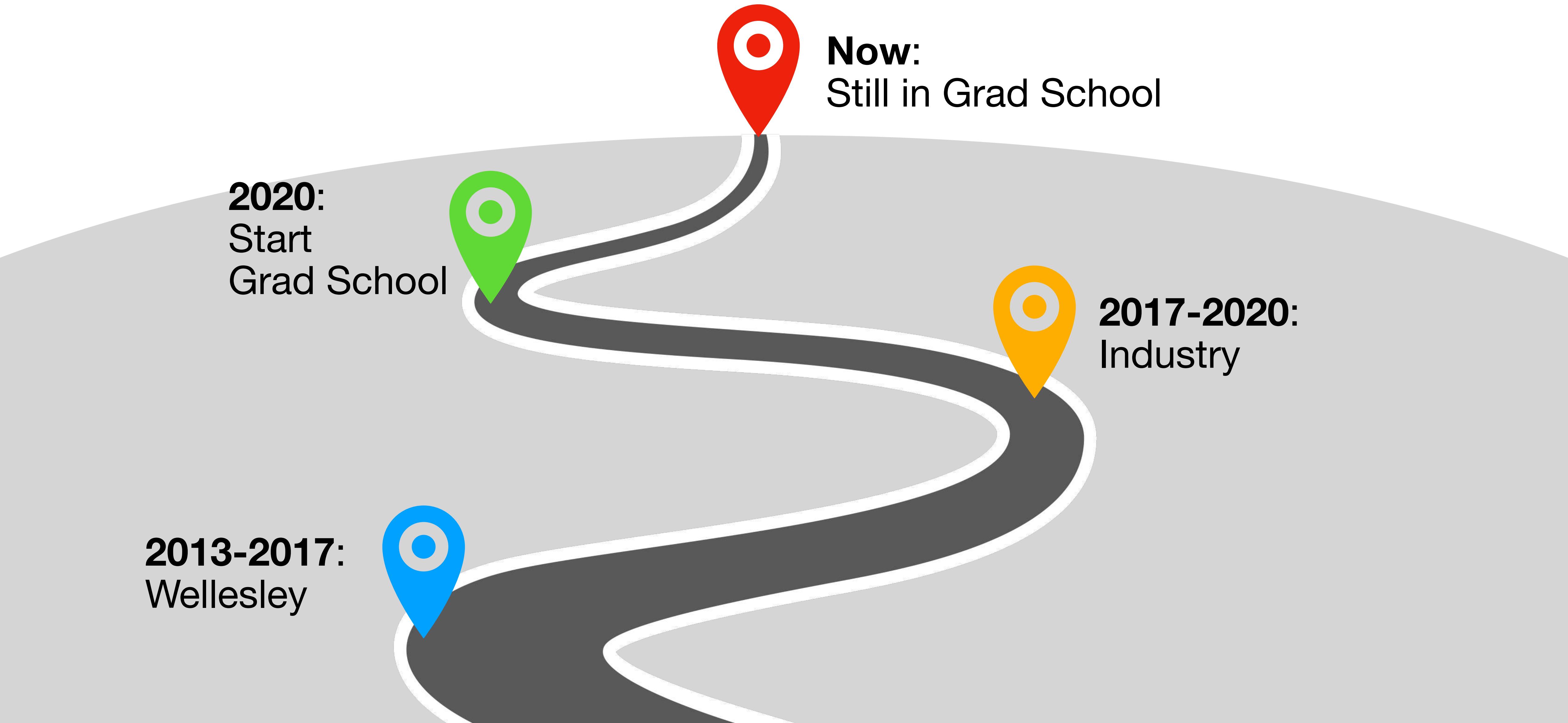




What I do for work?

- 5th-year PhD student/candidate at Northeastern University
- **Research Areas:** Human-Computer Interactions (HCI) & Natural Language Processing (NLP) in healthcare applications

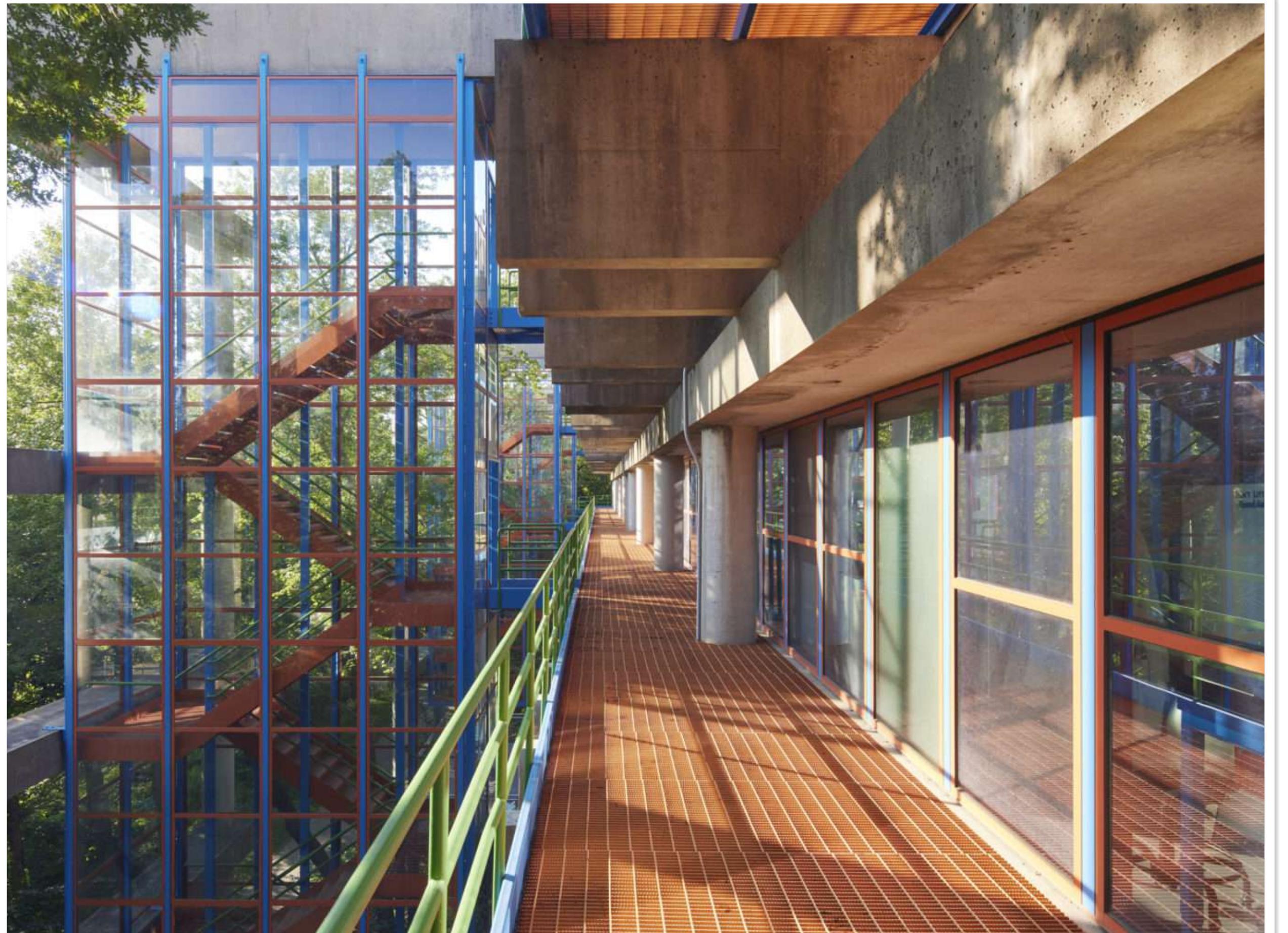




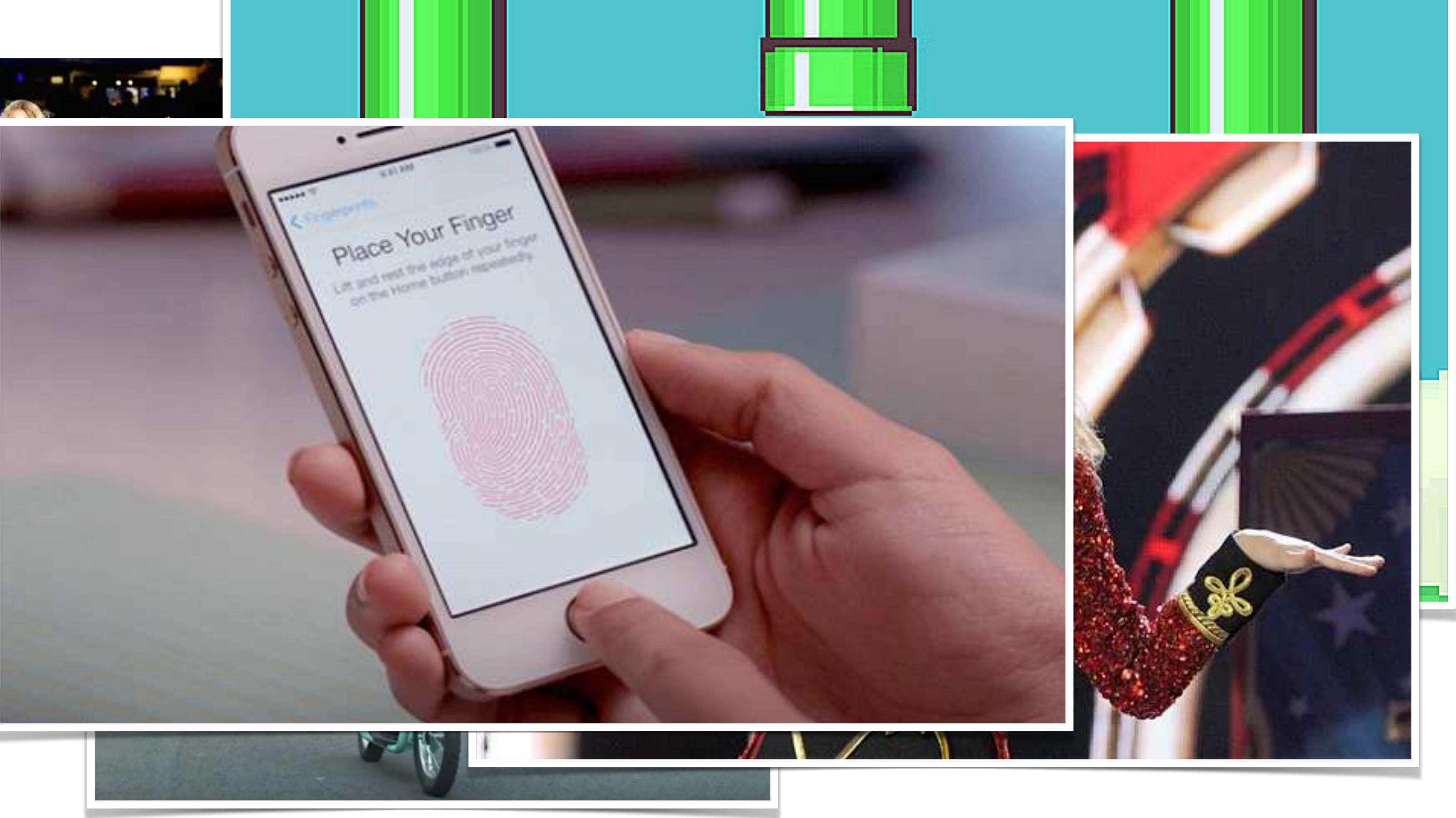
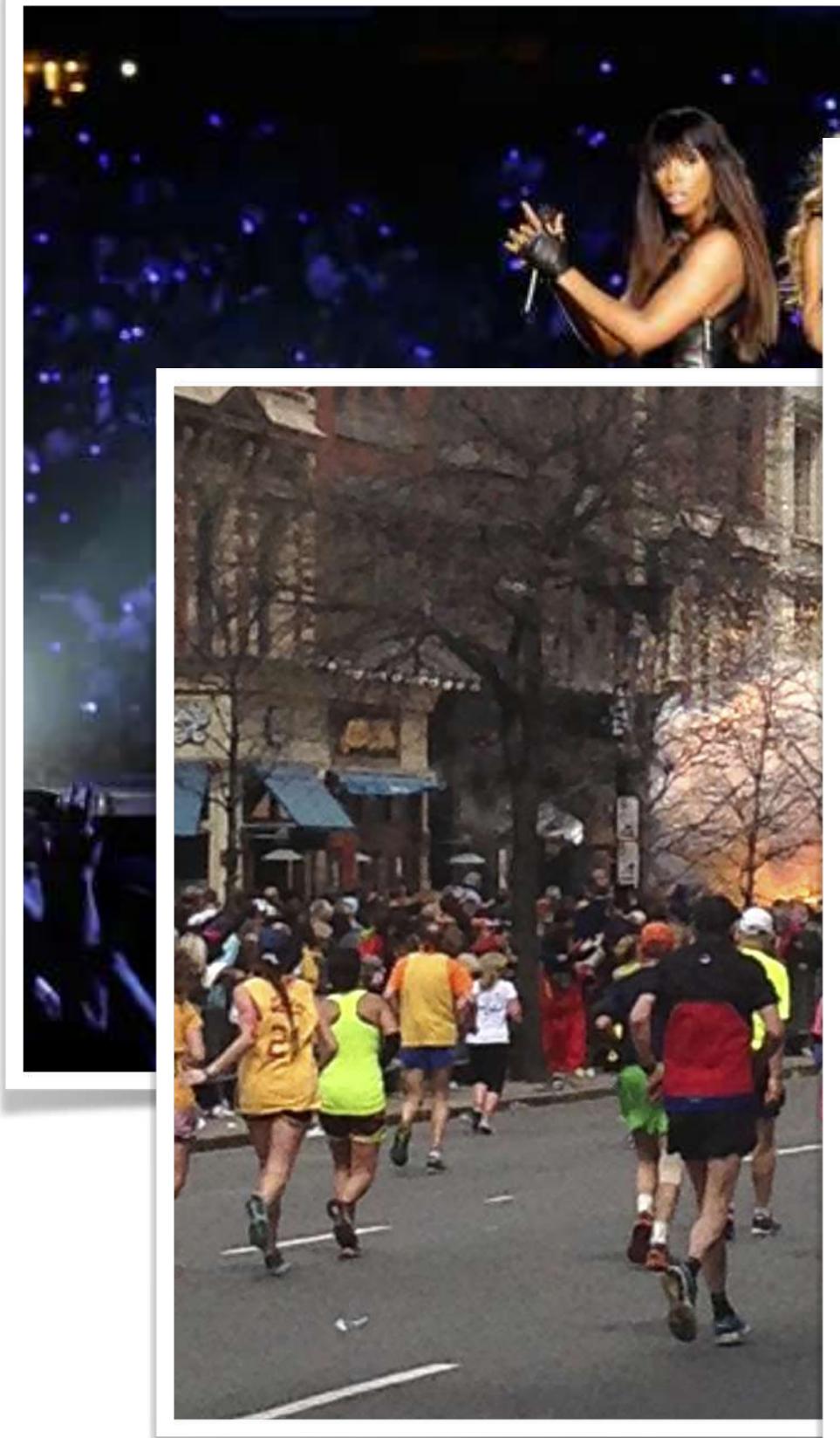


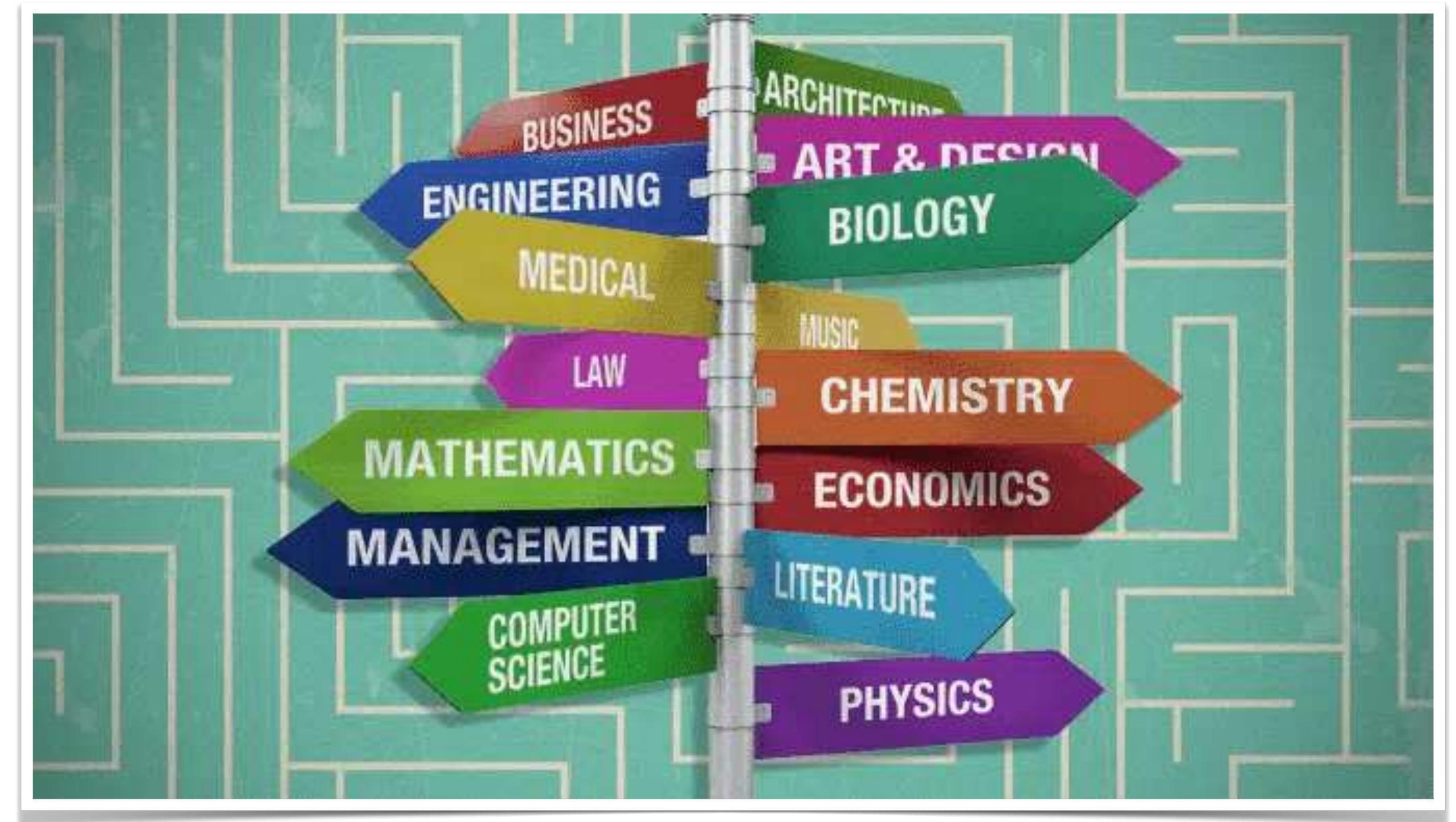
Wellesley College

Foundations in CS and Early Inspirations



2013



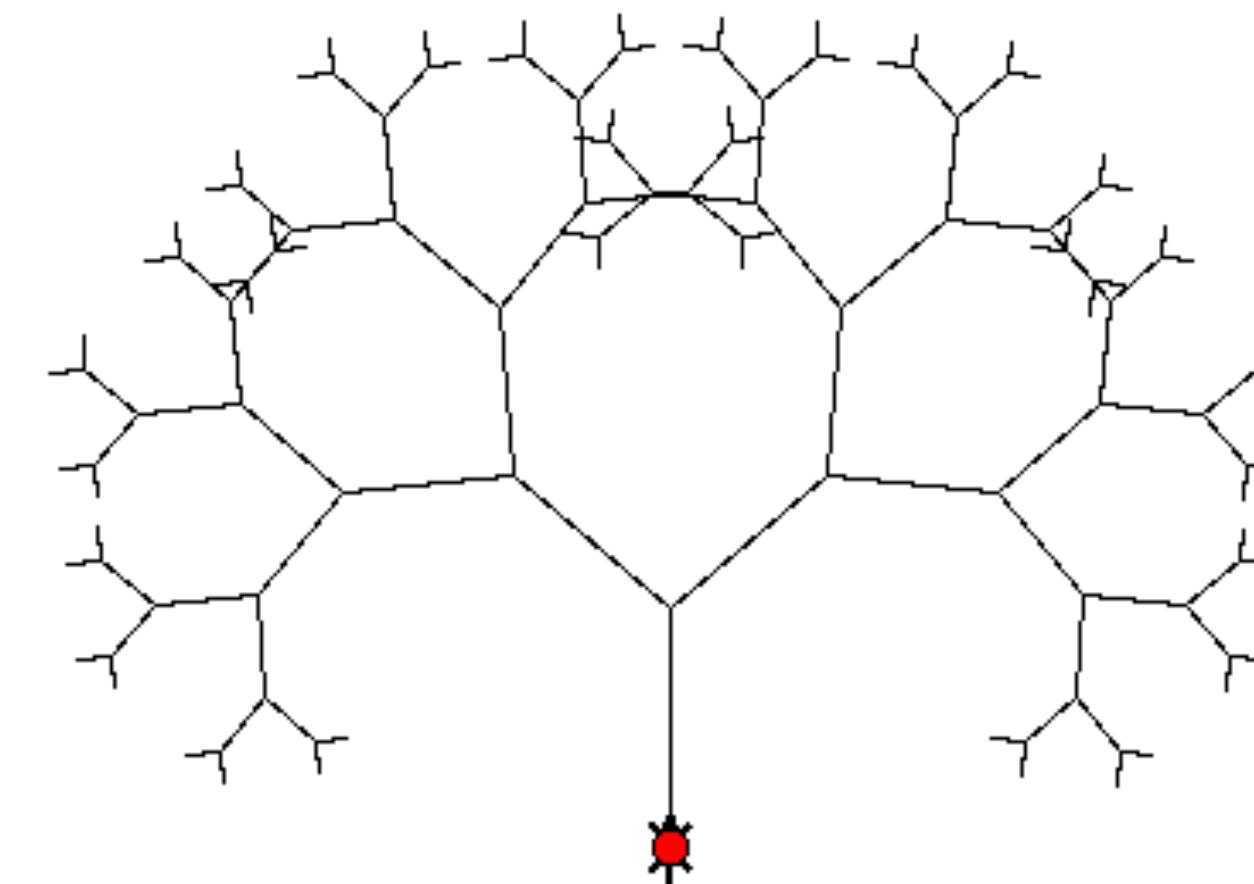
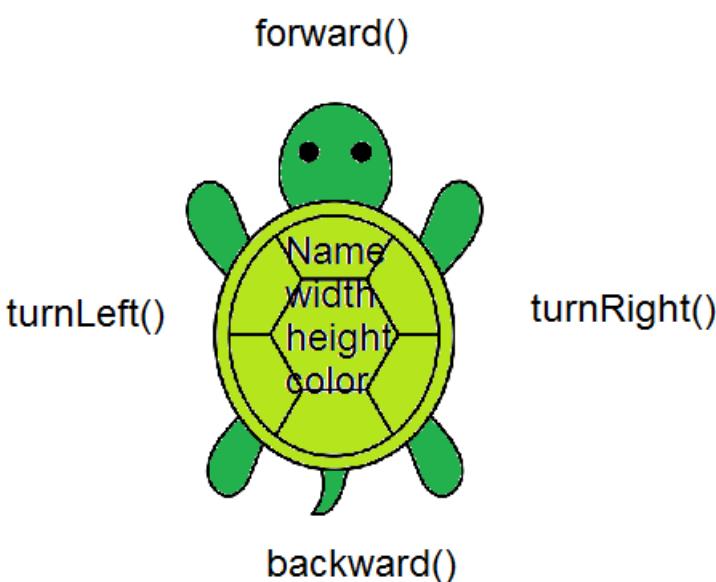


Whiptails!



CS 111: My first CS course!

First Year Spring

A screenshot of a computer application window for turtle graphics. The window has a menu bar with "Print canvas" and "Quit" on top, and "Run file" and "Run code" buttons below. The "Run code" button is currently active. The code area contains:

```
world.clear()
bob = Turtle(world)
```

More CS Courses!

Path towards CS major

CS 220: Human-Computer Interaction

CS 320: Tangible User Interfaces

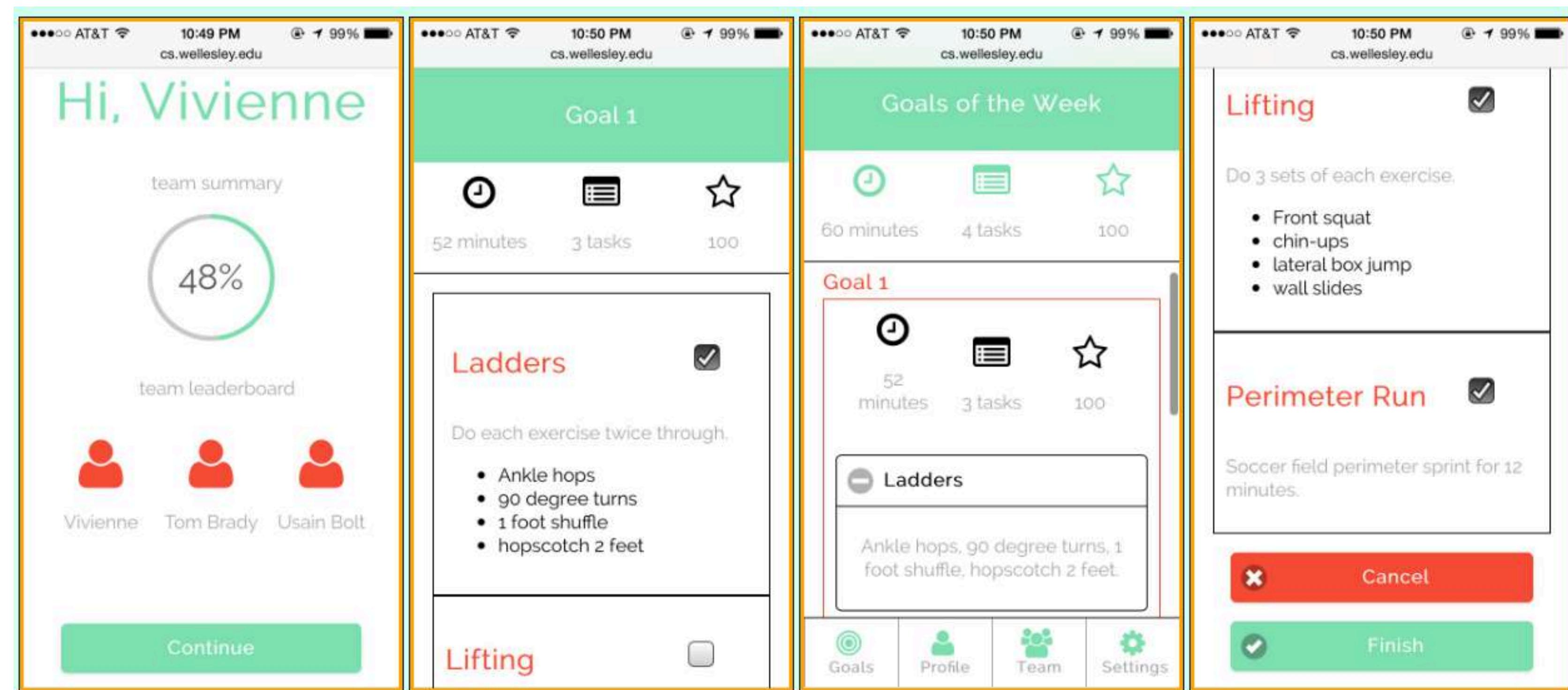
**CS 235: Languages & Automata
(Theory of Computation)**

CS 304: Databases with Web Interfaces

~~ Greatest Application ~~

TeamFit

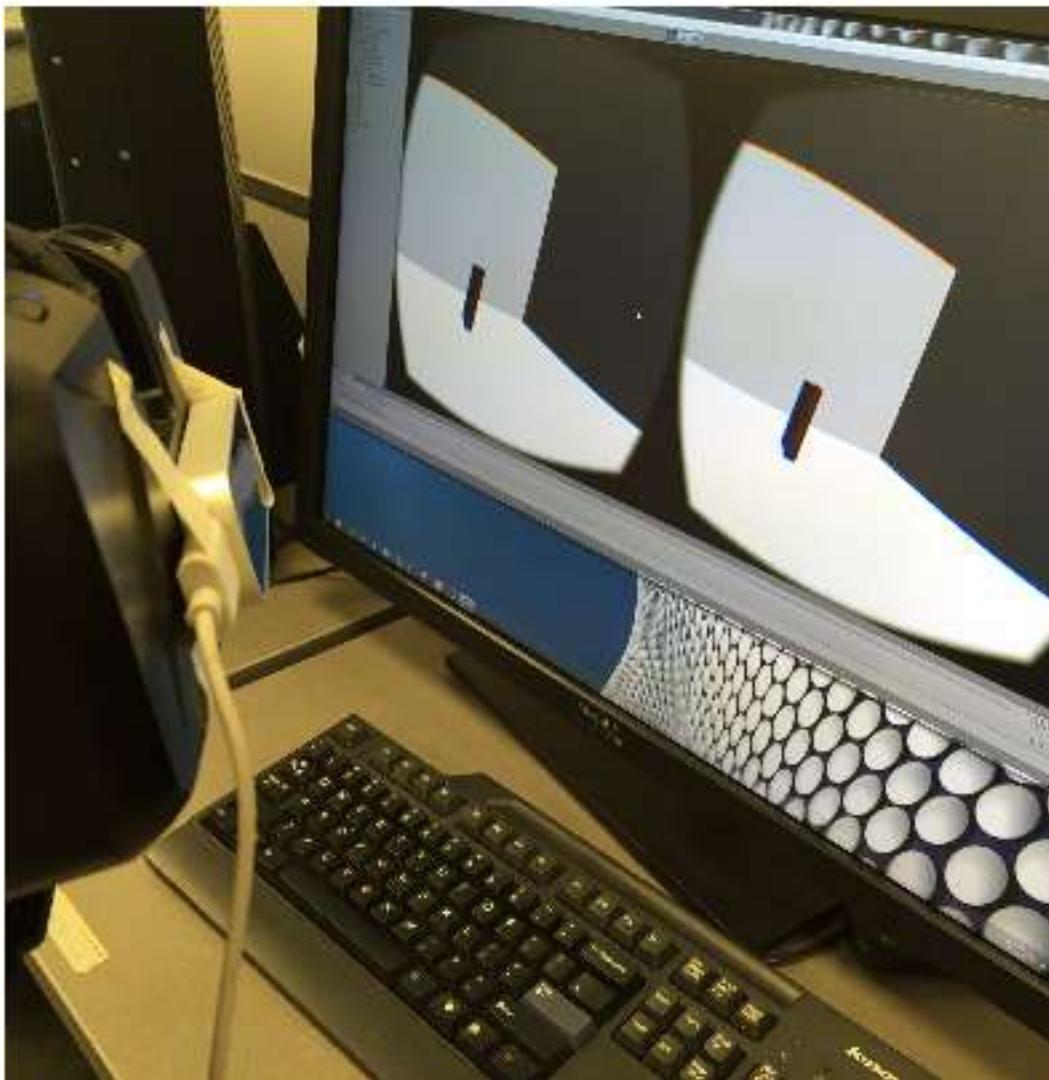
By
Claire Cerdá, Vivienne Shaw, Hye Sun Yun



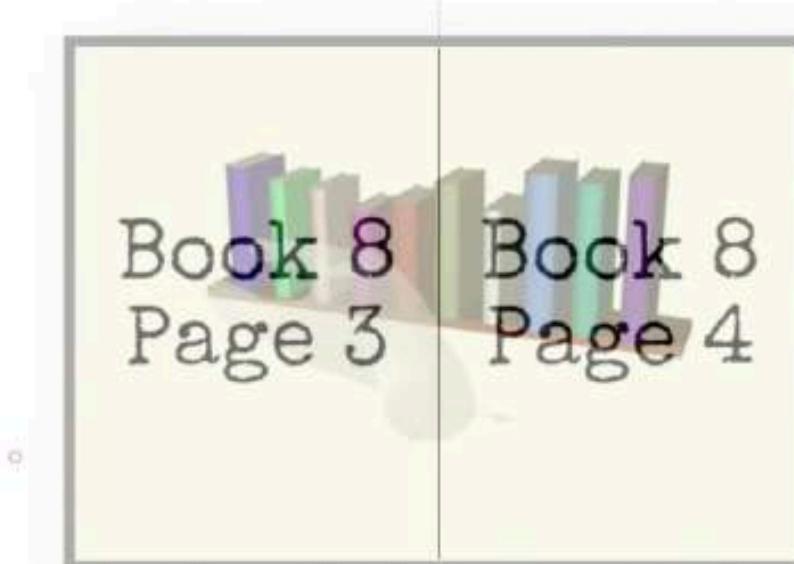
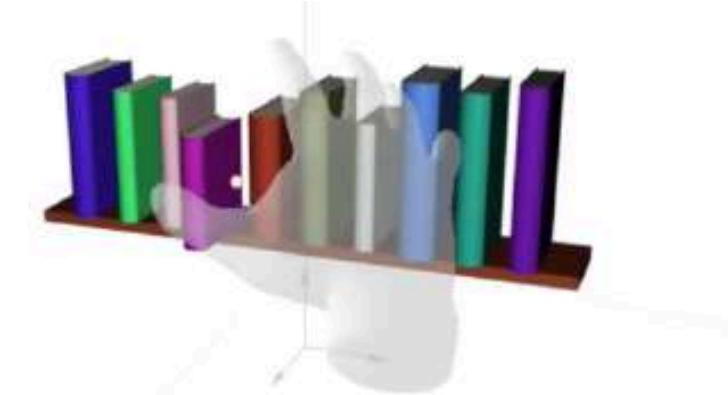
CS 220

SIFT: Bridging the Gap Between Physical and Digital Libraries with TUI

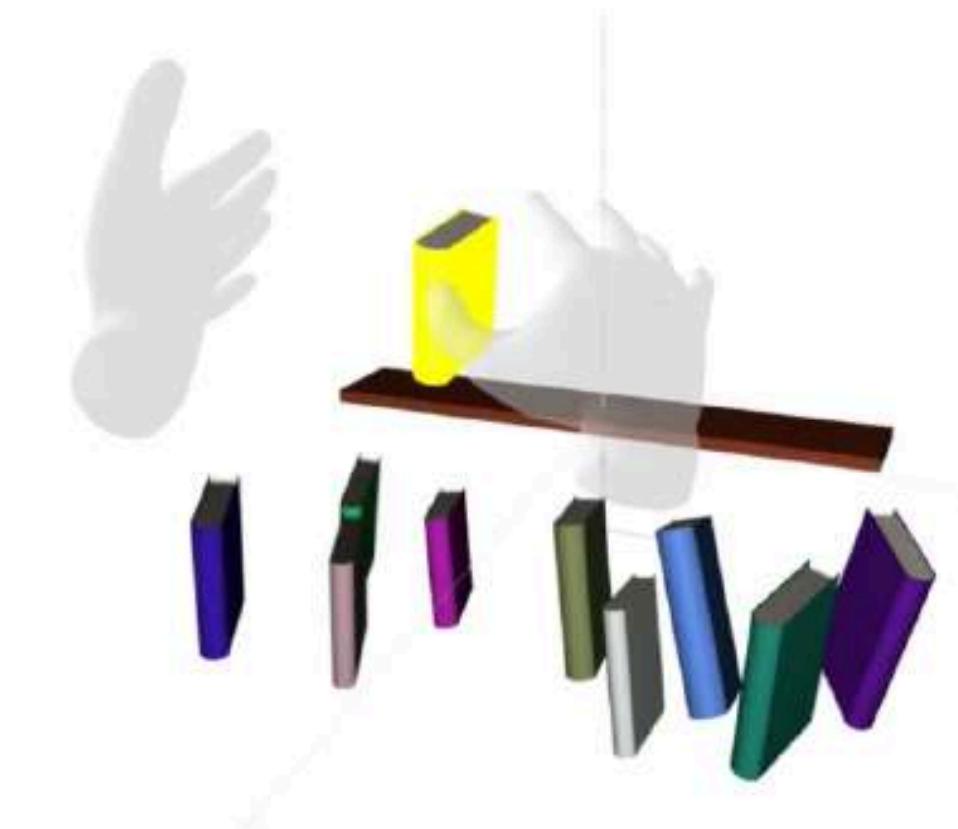
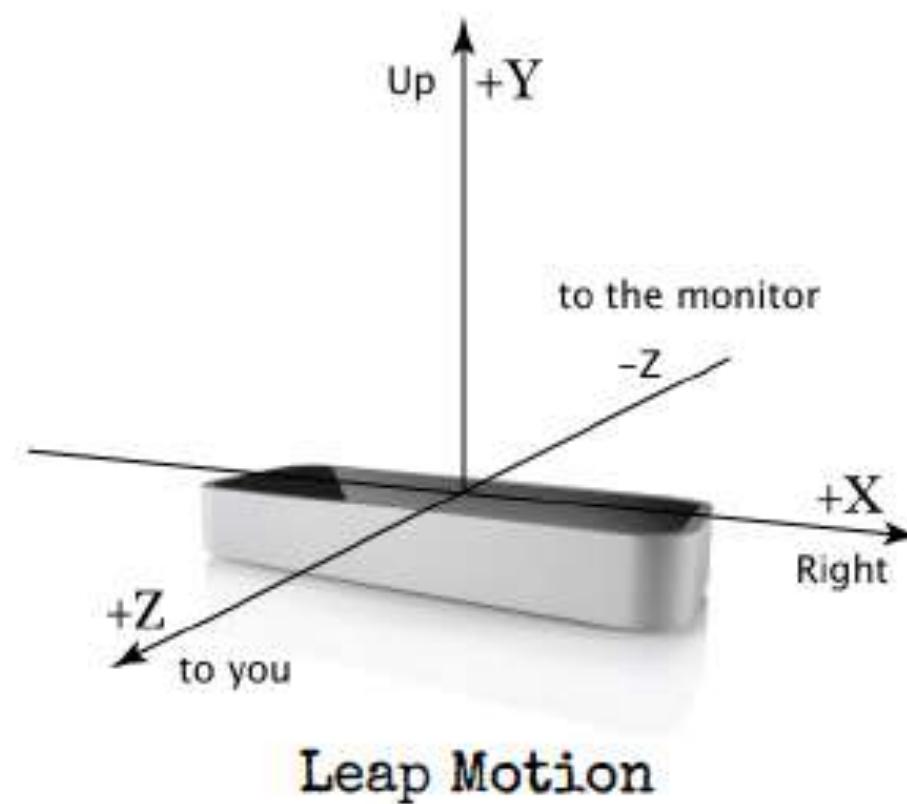
Katherine Kjeer, Ye Eun Jeong, Hye Sun Yun



SIFT 3D Shelf & Books
Hovering and pointing with index finger to select a book.



Swipe Gesture: flipping through pages of a book



Two-Hand Holding Gesture:
panning/translating/moving
the books



Beginnings of WHACK

Hacker & Volunteer





Research Experiences for Undergraduates

My first taste of CS research

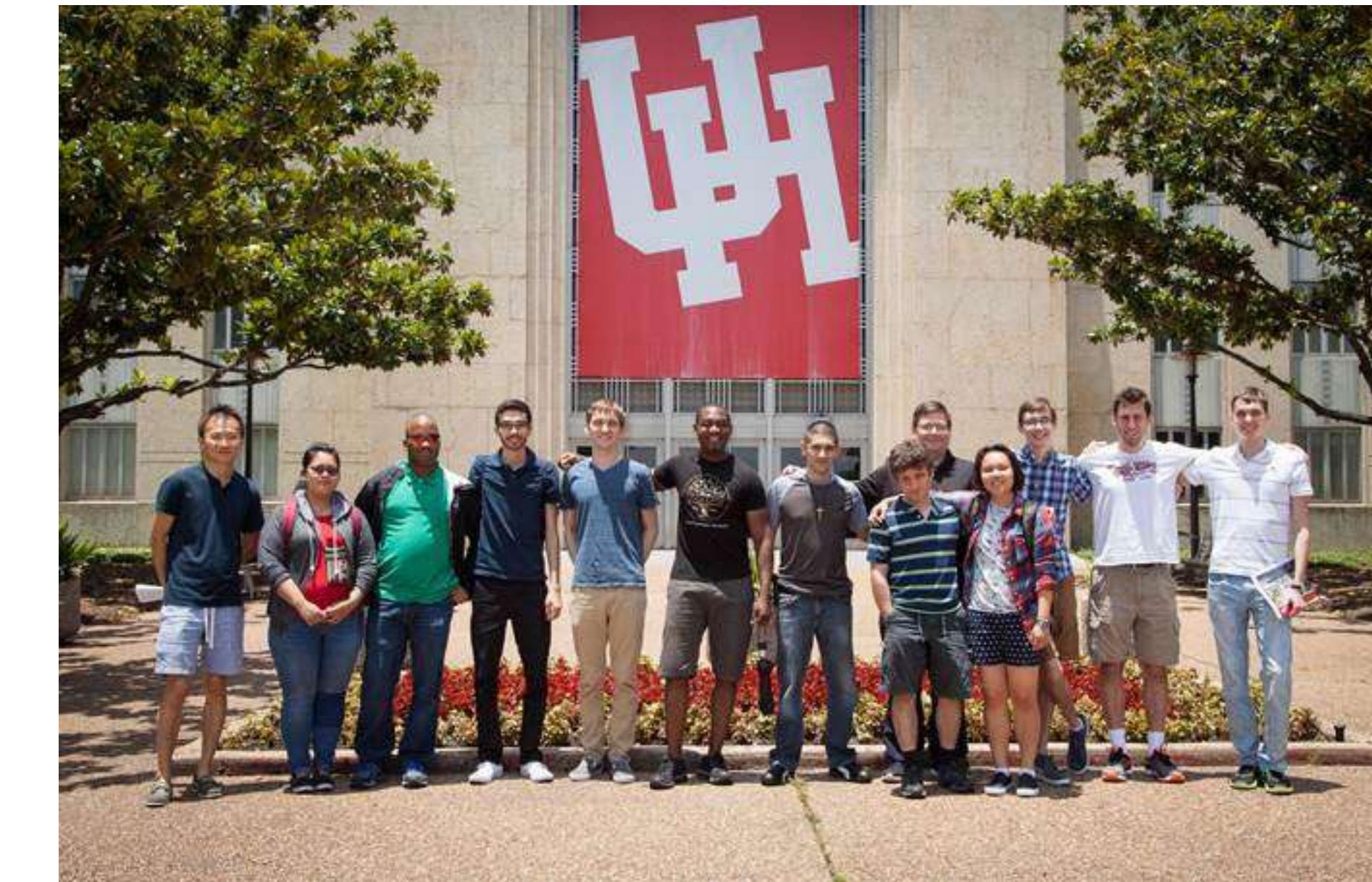
- Summer after Junior year at University of Houston
- Literature review in Computer Vision field
- Methods to prevent spoofing attacks in FR systems
 - **Spoofing:** *fooling FR systems by pretending to be some other identity or disguising to evade identification*

Anti-Spoofing for Face Recognition

Maria D. Hernandez*
Department of Computer Science
California State University, San
Bernardino
San Bernardino, CA 92407
hernm497@coyote.csusb.edu

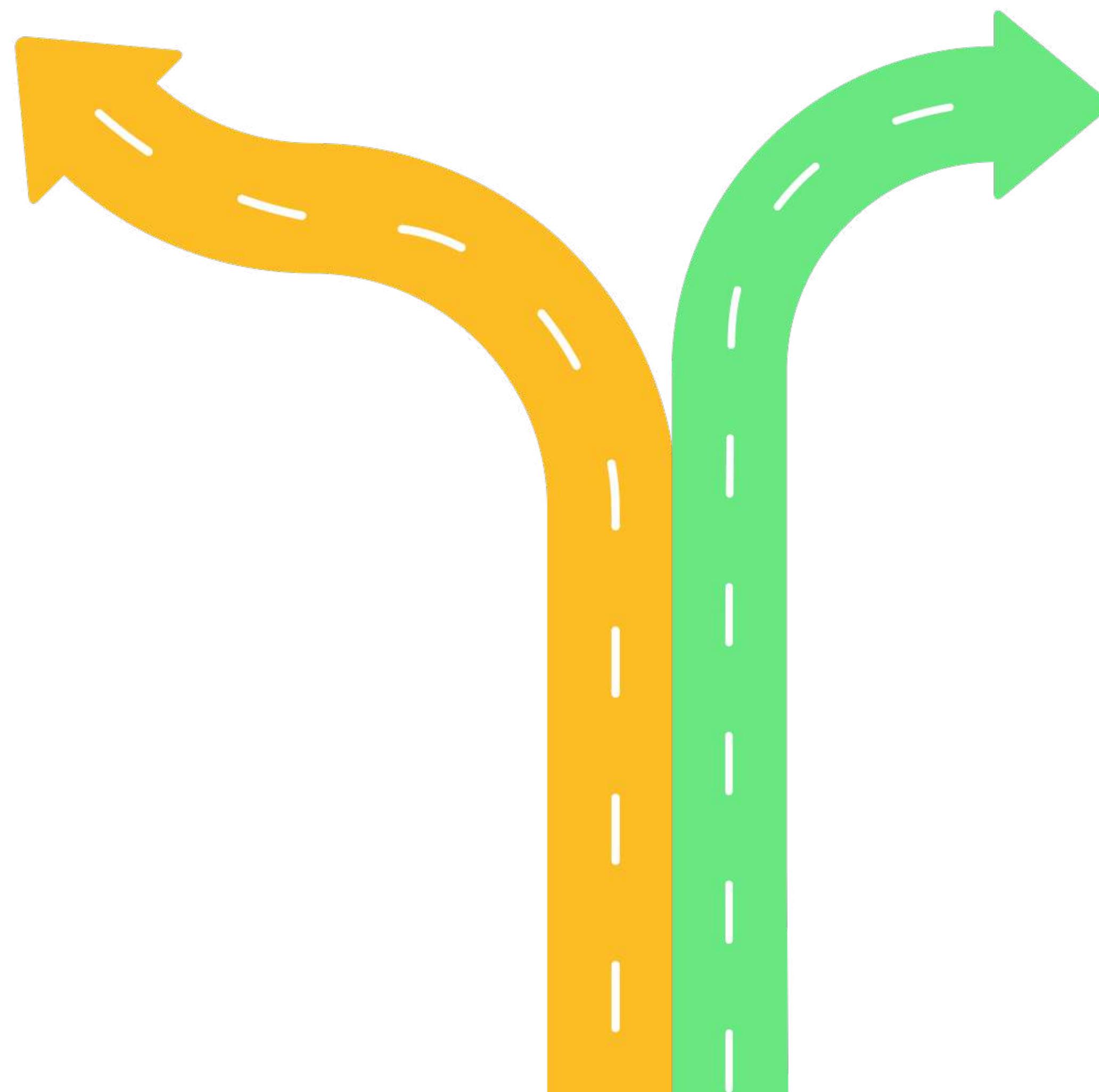
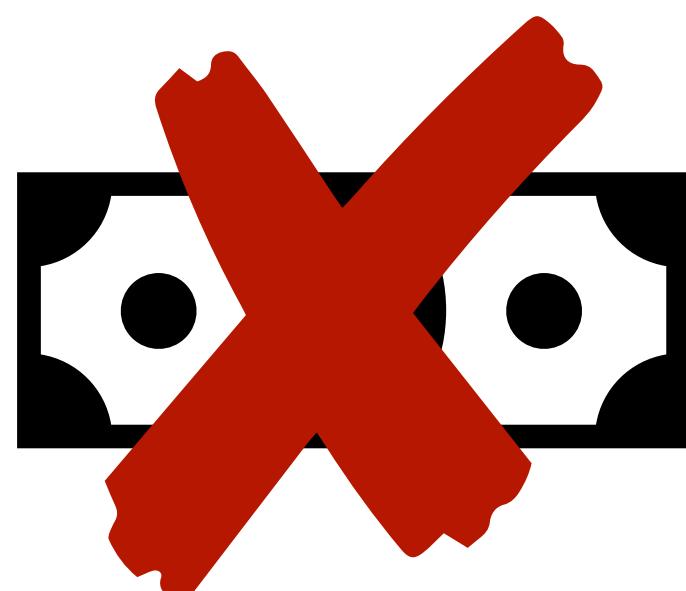
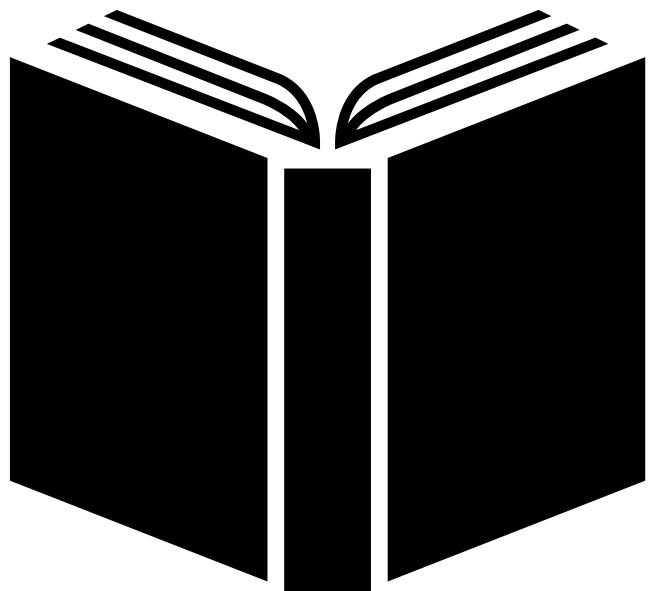
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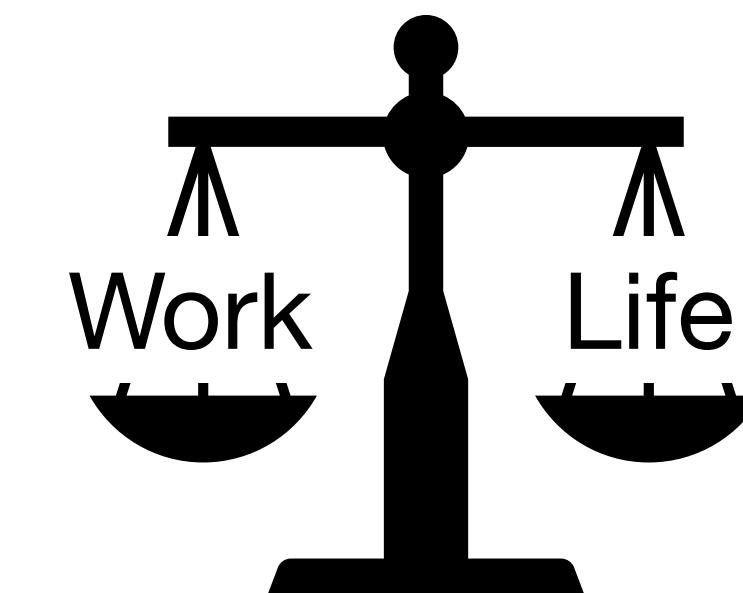
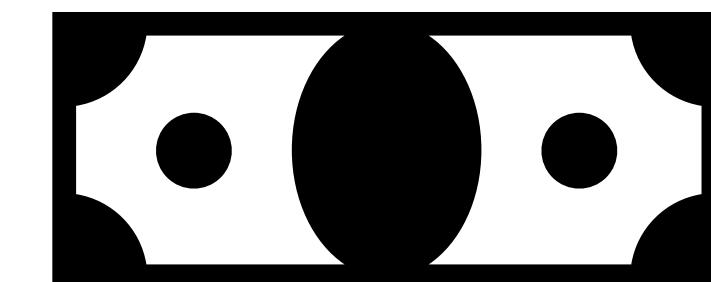


Senior Year

Grad school ???



Industry ???



Job Search Process

Slow & Grueling

- Applications
- Technical Interviews....



Lessons Learned

- **Community is important!**
 - Community (professors & peers) helped me build my confidence in CS & shaped my positive experience
- **Try new things!**
 - Pursuing new experiences opened my horizon/career possibilities
- **Find opportunities to work on projects and to collaborate!**
 - Working on fun projects (esp. in courses) helped me gain valuable skills and also helped me get an industry full-time job

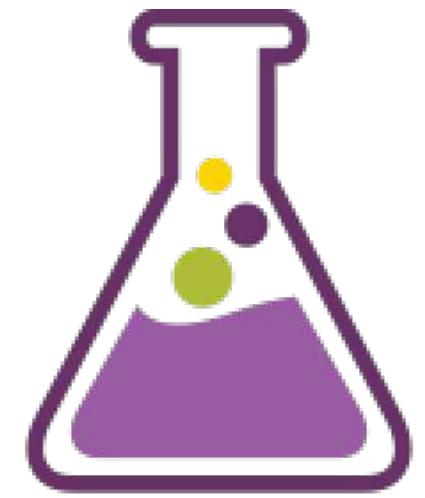
Transition to Industry

Gaining Real-World Experience



First Steps into Industry

Wayfair Labs



WAYFAIR LABS

- 2-month program with a cohort of 20 people
 - Full-stack projects with the company's tech stack
 - Workshop courses and mentors
 - Assigned to a engineering team at the end

Supplier-Facing Tool Team

Full-Stack Software Engineer

- **Team that builds and manages the web tool for suppliers**
- **SKU Addition Tool**
 - Add new product details (name, category, dimensions, options, images, etc.) to our system for SKU (unique ID) generation
 - UI or Excel upload
 - MANY features for various scenarios

Developing Skills

Technical & Soft Skills

- **Technical**
 - MVC framework, PHP, JavaScript (React & Redux), MSSQL, .NET Framework (C#), designing & developing APIs, Code Review
- **Soft**
 - Project management, Communication (estimations, retrospectives, stand-ups, code reviews), Writing scope documents, Collaboration & People management, Organizing programs & events (peer programming, team social events)

Key Projects

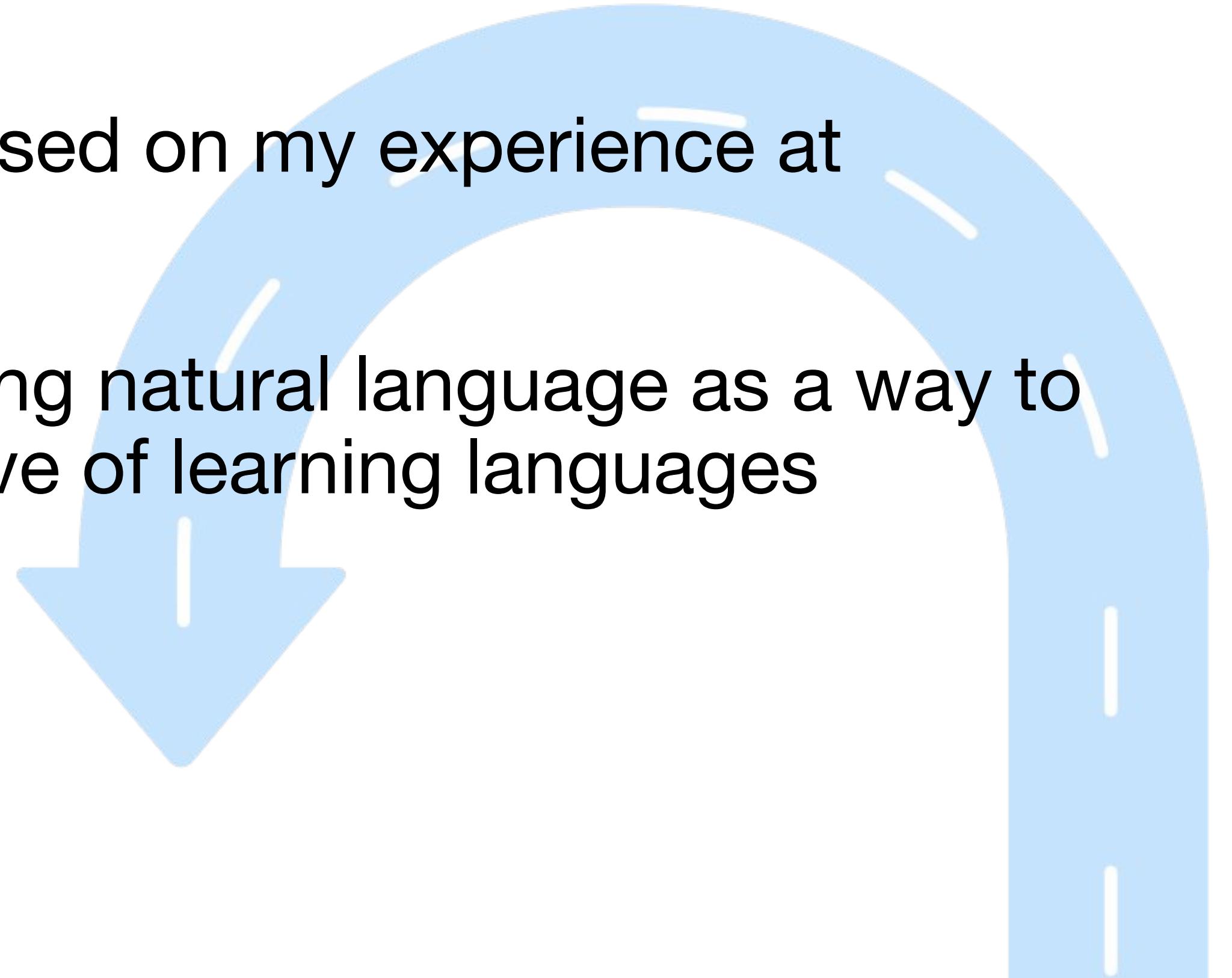
- Refactoring from in-house frontend framework to React & Redux
 - Multi-month project
- Developing new Excel ingestion service
- Creating new workflows for the web tool

Mentoring, Teaching, & Managing

- Mentored new engineers on the team
- Taught courses for Quality Analysts to become Quality Engineers
- Became a tech lead after 2 years managing 3 direct reports

Pivoting to PhD...

- Path to more research, mentoring, and teaching
- Identifying Research Areas
 - **Human-Computer Interactions (HCI)** - based on my experience at Wellesley
 - **Natural Language Processing (NLP)** - using natural language as a way to improve human-computer interactions & love of learning languages
- My manager was very supportive

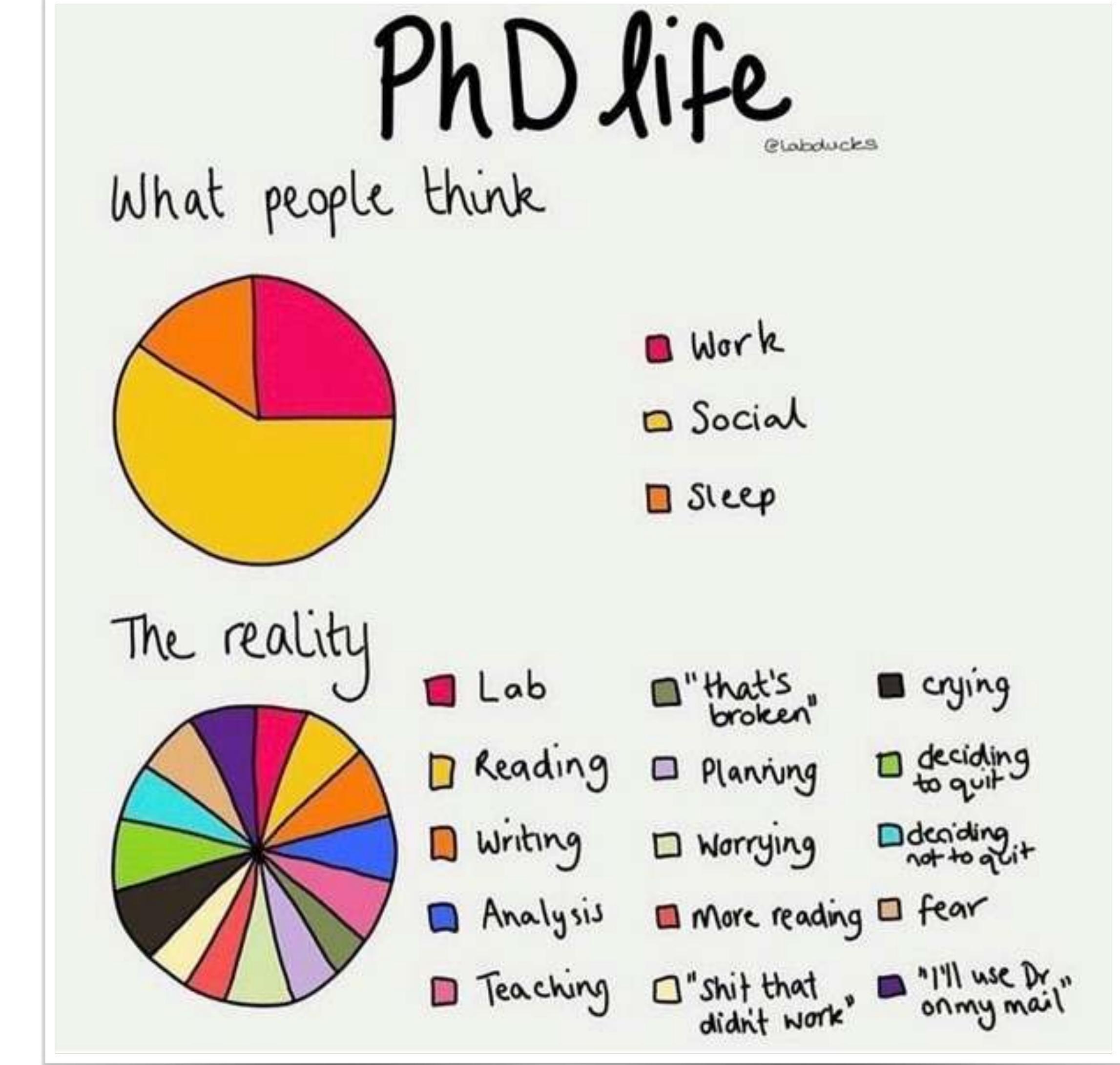


Lessons Learned

- **Finding good people & cultivating community is important!**
 - People can make your experience positive or negative
 - Network/Life-long friends
- **Fast growth due to growing company!**
 - Fast-growing companies can be an exciting place to build a career
- **Industry might not be a good fit for a long-term career!**
 - I learned that I need more flexibility and freedom in my work
- **Burning out can happen quickly!**
 - I am bad at saying “NO” and struggle with perfectionism

PhD Journey

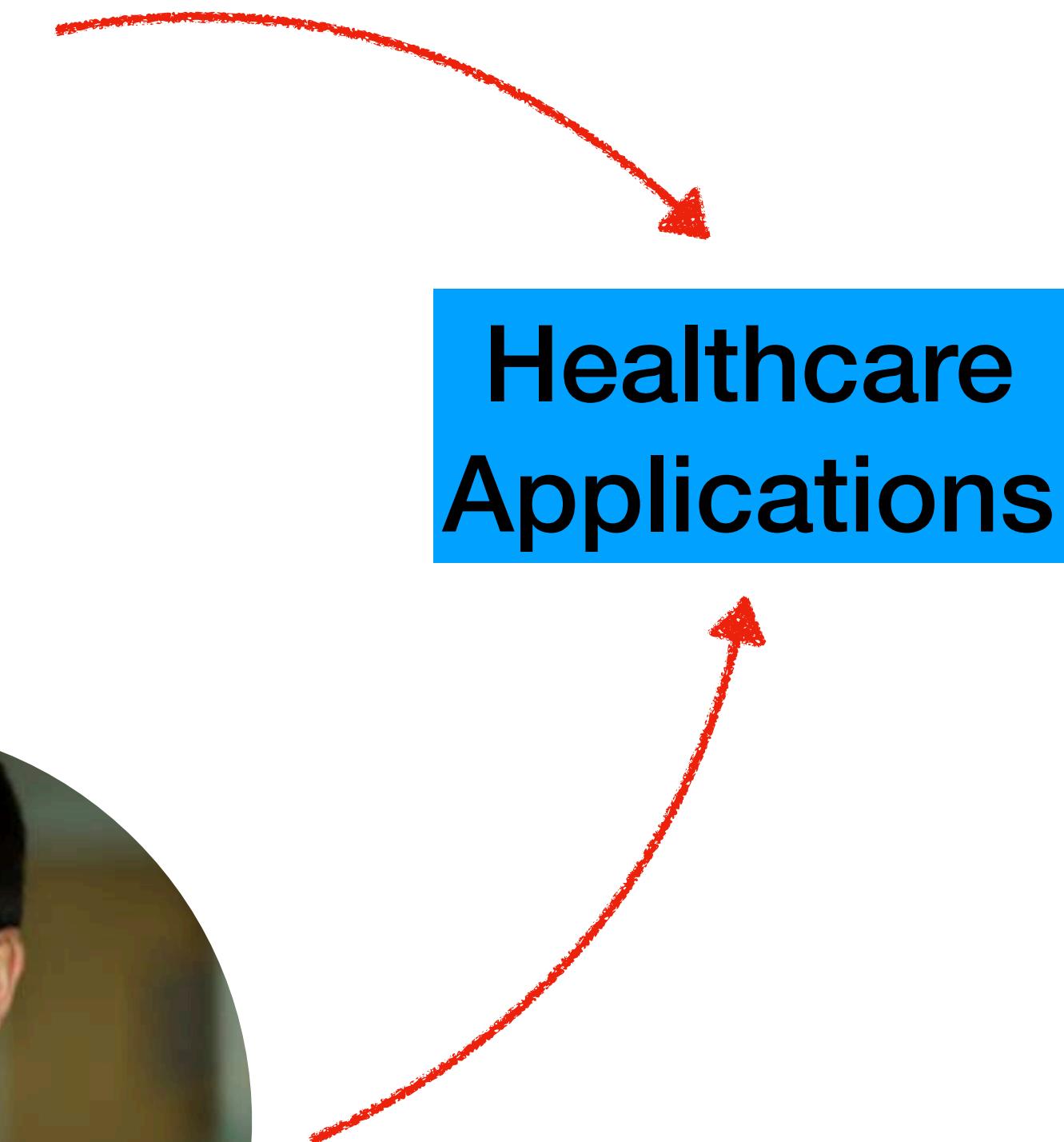
Returning to Academia with a Fresh Perspective



Co-Advised HCI + NLP

- **Tim Bickmore**

- HCI, dialogue systems,
intelligent virtual agents,
human-robot interactions



- **Byron Wallace**

- Machine learning, NLP, data
mining, healthcare-related
text



Zoom PhD

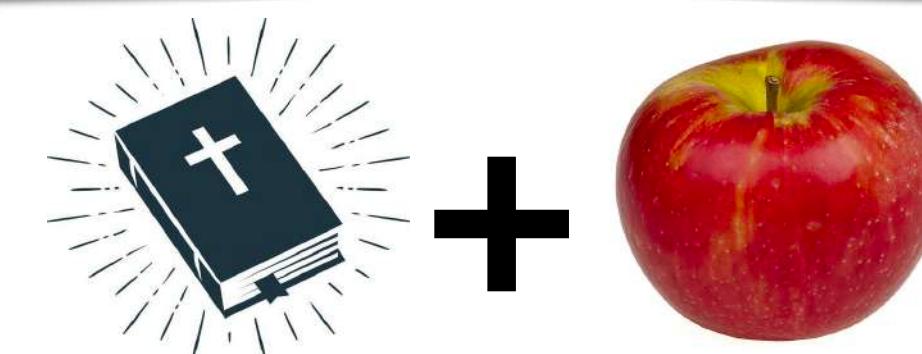
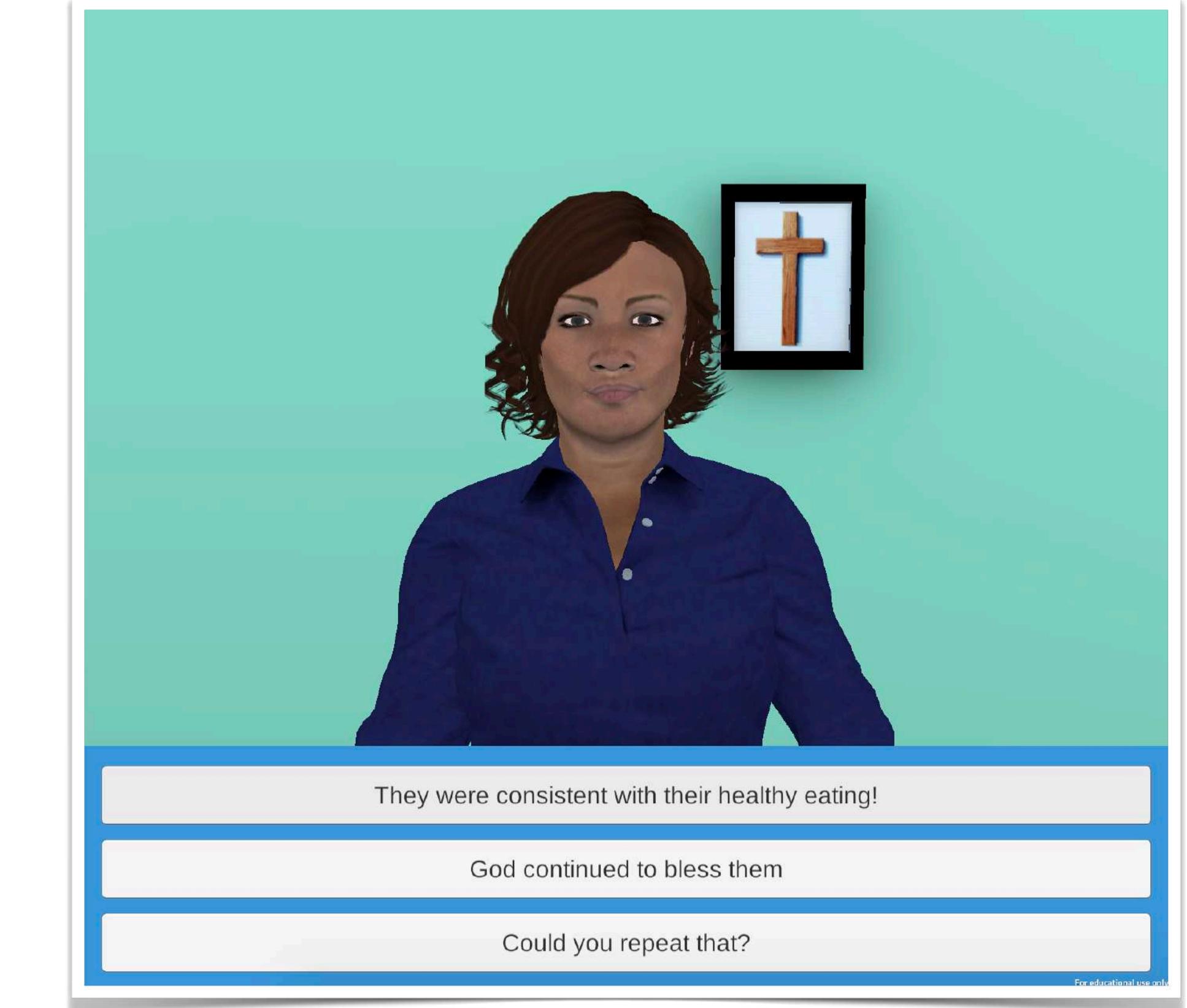
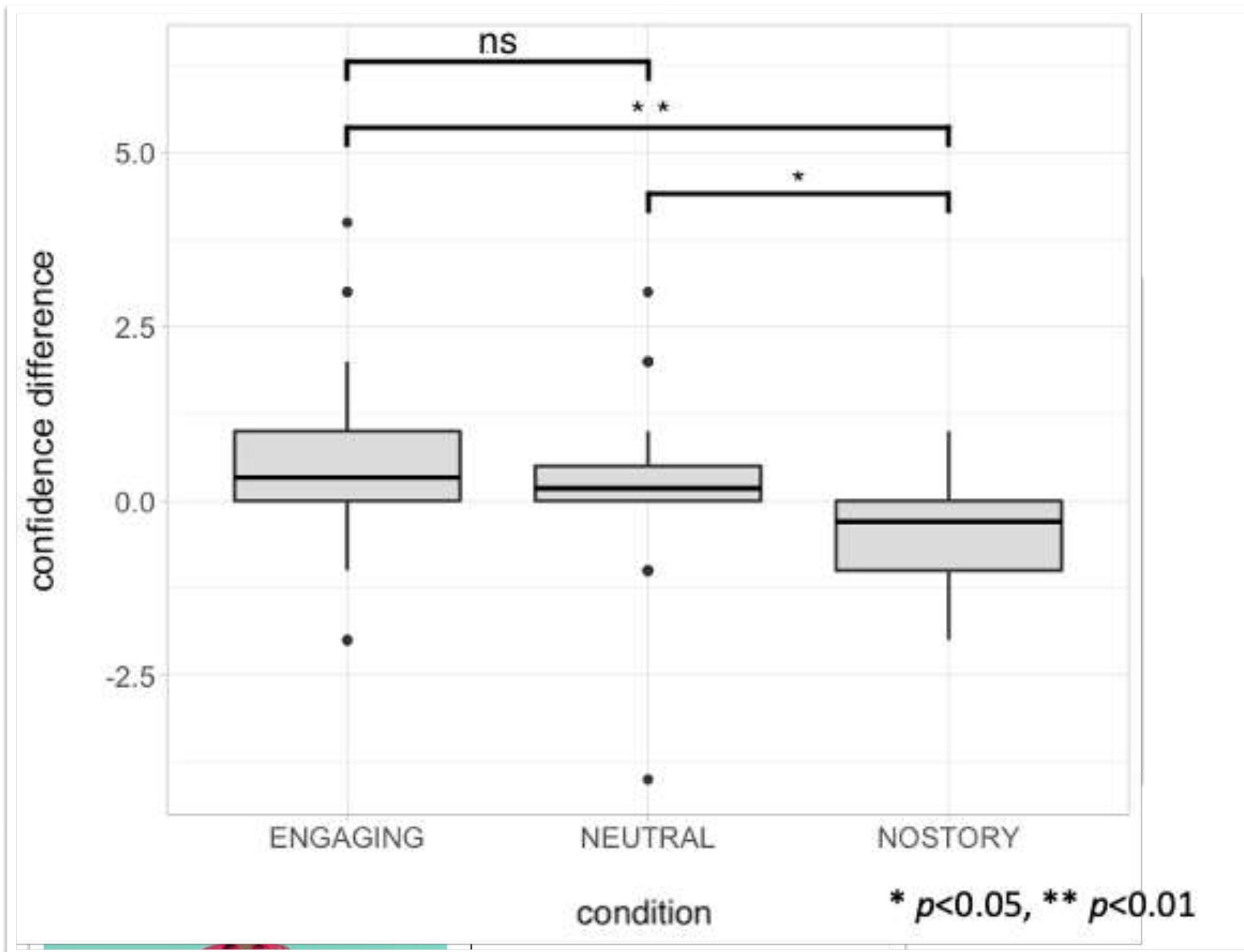
First Few Years...

- Everything was remote
 - lab meetings, project meetings, courses
- Felt like just another job but with classes
- Taking courses and doing homework was challenging at first



Applying skills from industry

- Project Management
 - Breaking down large tasks into manageable parts
 - Prioritization of tasks
- Communication
- Managing advisors
- Reading tech documentation & understanding + writing code
 - Helpful for quick prototyping



Smart & Connected Church: Mobile Health App for Black Churches



RobotReviewer LIVE: creating medical systematic reviews more automatically



Your Dashboard

Reviews with the status ✓ do not require any action.
Reviews with the status ! requires you to screen abstracts.

Please click the buttons with the abstract numbers to be directed to the corresponding screening page.

Status	ID	Title	Last Updated	# of Abstracts to Screen	Link to Live Summary
!	covax	covid vaccination trials	2021-10-12	2	Live Summary
!	covid-Er-3XekiZv	covid vaccination	2021-10-07	124	Live Summary

[+ Create New Live Summary](#)

Topic expert notified, and validates results

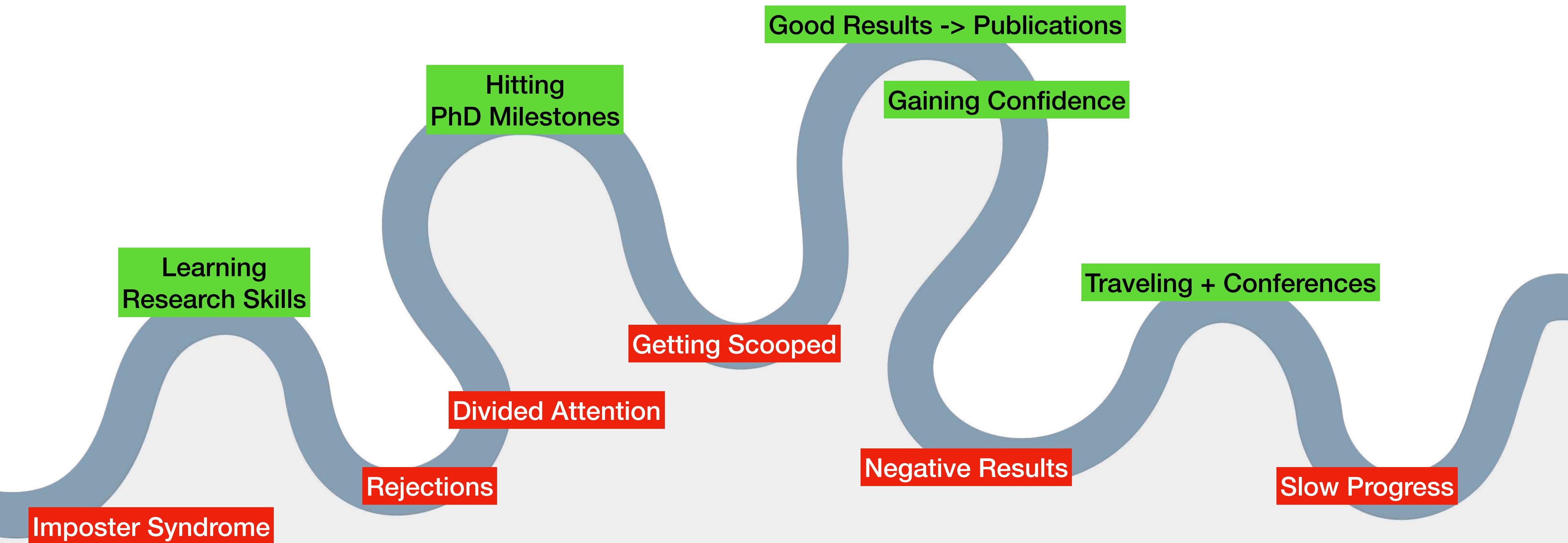
RobotReviewer LIVE

Topic expert notified, and validates results

Published living update within abstract

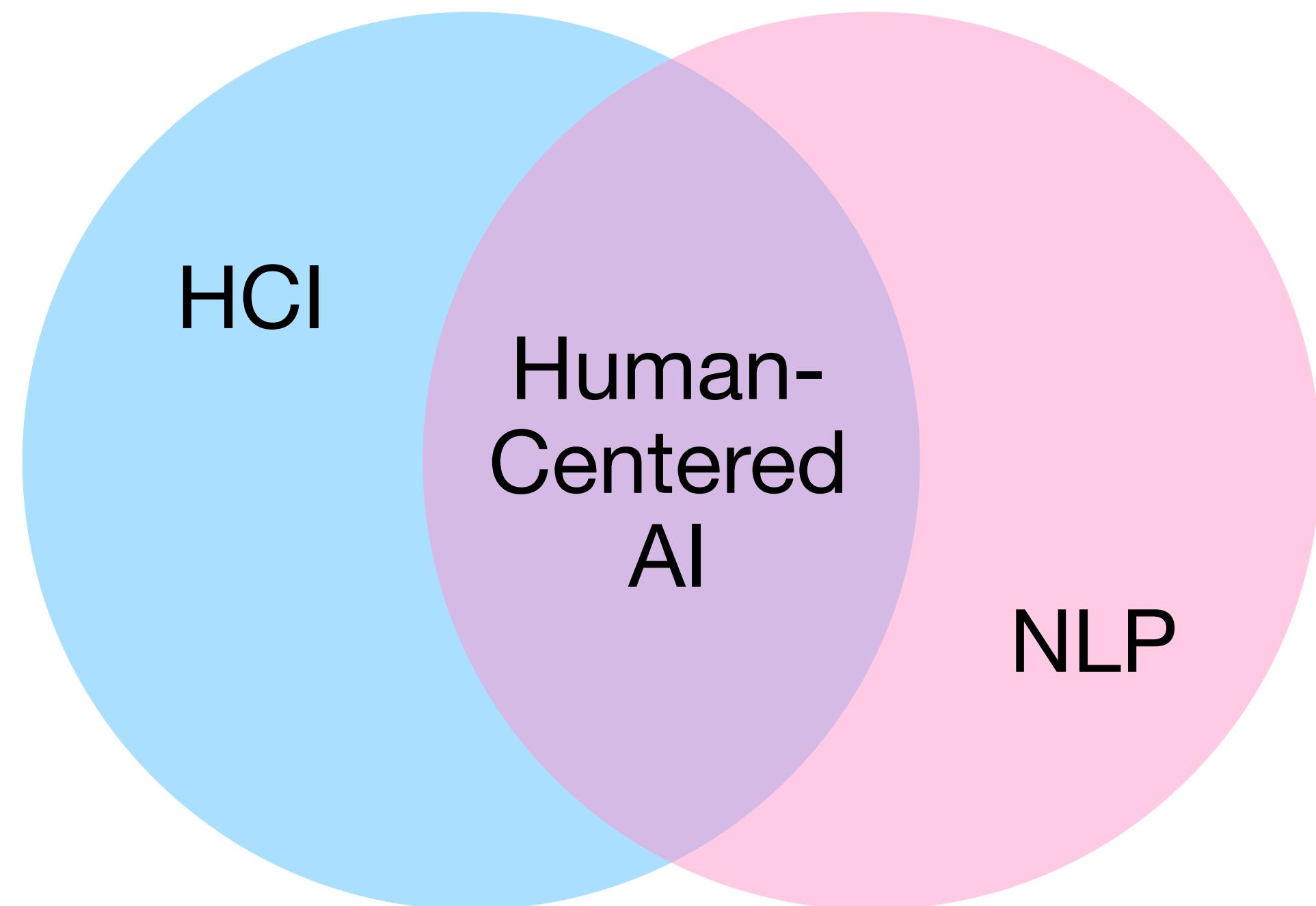
which appeared eligible to 9 of these were judged from 14 studies, which

Ups & Downs



Narrowing my research focus...

- Gap between NLP & HCI
- Focusing on how we can build better (human-centered) NLP technologies for healthcare using HCI research methods
 - **Design:** User needs, wants, requirements, etc.
 - **Evaluation:** Benchmarks (automatic) + Humans (manual)



**Understanding
the Users**

**Understanding
the Models
(LLMs)**

**Understanding
Human-AI
Interactions**

My Dissertation

Making medical info accessible via LLMs

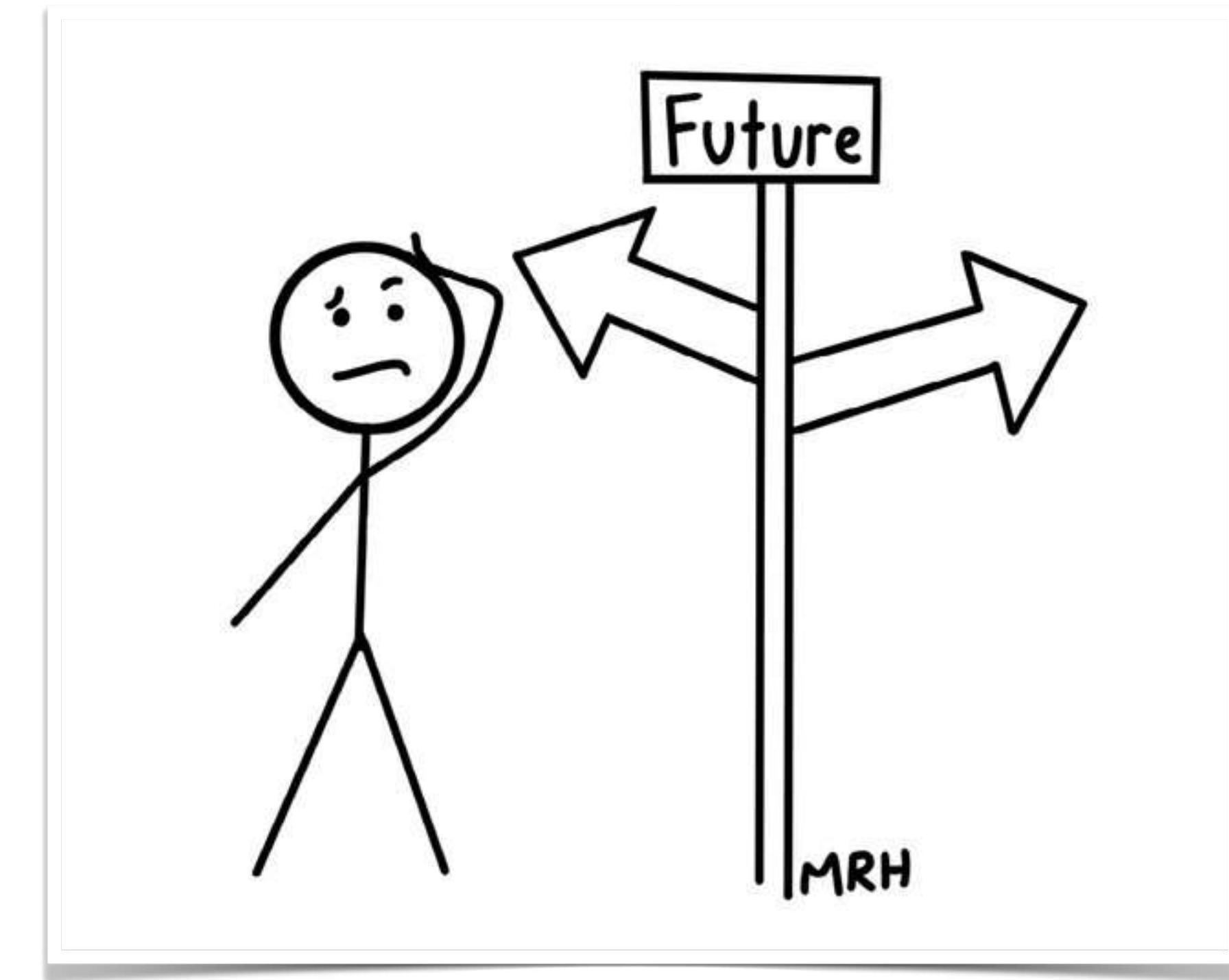
- **For Experts**
 - Appraising the Potential Uses and Harms of LLMs for Medical Systematic Reviews (EMNLP 2023) **Users + Models**
 - Automatically Extracting Numerical Results from Randomized Controlled Trials with Large Language Models (MLHC 2024) **Models**
- **For Non-experts (laypeople)** **Models + Human-AI Interactions**
 - Plain Language Summaries of Medical Literature
 - How does “spin” (distorting reporting & interpretation of results) affect LLMs and Humans?

Lessons Learned

- **Research & PhD doesn't define me!**
- **Research is hard but fun if you work on things that interests you!**
 - Failures are common
 - Can be an expert in something
- **Good research doesn't happen over night or in isolation!**
- **Have a long-term outlook!**

Future Directions

Where to go next?



Future Plans

- Plan to finish my PhD in the next 1.5 years or so.
 - Teach a course next semester!
 - Publish more papers!
- Post-doc or more teaching-focused positions in academia



Advice

From personal experience

- Be flexible
- Enjoy the process & take your time
- Failing is part of the process
 - BUT fail fast if possible
- Value people & community

Thank you! Any questions?



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