

Catherine Yeh

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EDUCATION

Harvard University

Ph.D. in Computer Science

Cambridge, MA

2022 – Present

Research Interests: Visualization, Interpretability, Human-AI Interaction

Advised by Martin Wattenberg & Fernanda Viégas

Williams College

B.A. in Computer Science & Cognitive Science

Williamstown, MA

2018 – 2022

Thesis: “[Toward an Empirical Framework for Post-hoc Explainable AI](#)”

Advised by Iris Howley

Graduated Summa Cum Laude (top 2% of class) with Highest Honors in Computer Science

RESEARCH EXPERIENCE

Apple Research – Human-Centered Machine Intelligence Group

Incoming Research Intern

Seattle, WA

Summer 2024

Microsoft Research – Human Understanding & Empathy Group

Research Intern (Mentors: Gonzalo Ramos, Rachel Ng)

Redmond, WA

Summer 2023

- Designed and implemented a personalized environment for collaborative writing with large language models (LLMs) using React, Typescript, and LangChain.
- Evaluated interactive prototype with user study to better understand how LLMs can assist and augment people’s writing capabilities while preserving agency and ownership in users’ creative processes [1].

Harvard University – Insight & Interaction Lab

Computer Science Research Assistant (Advisors: Martin Wattenberg, Fernanda Viégas)

Allston, MA

2022 – Present

- Design interactive visualization tool [2] to explore global self-attention trends and model interpretability in language & vision transformers through their query and key vectors (github.com/catherinesyeh/attention-viz).
- Implement tool, perform attention computations, and analyze data using PyTorch, Deck.gl, and Vue.

Adobe Research – Media Intelligence Lab

Research Scientist Intern (Mentors: Franck Dernoncourt, Nedim Lipka)

San Jose, CA

Summer 2022

- Developed vision for the next-gen document reader [4] by creating UI prototypes, video demos, and whitepaper with research on potential features and competitors (github.com/catherinesyeh/nextgen-prototypes).
- Designed and implemented a novel NLP-powered acronym glossary for Adobe using Confluence REST API and Python acronym extraction script.

Microsoft Research – Productivity & Intelligence Group

Undergraduate Research Intern (Mentors: Jenna Butler, Christian Bird)

Redmond, WA

Summer 2021

- Built Microsoft Teams bot, personalized dashboards, and ML auto-coding system for qualitative survey responses using Python, Sentence Transformers, and Power Platform.
- Analyzed personas [5] and designed scalable, automated self-reflection interventions for study on hybrid workforce productivity and well-being.

Williams College – Computation² Lab

Computer Science Research Assistant (Advisor: Molly Feldman)

Williamstown, MA

2021 – 2022

- Studied state of replicability in human-computer interaction and determined the necessary components that constitute a replicable human computation study.

- Developed set of guidelines to aid researchers in designing and publishing studies for replicability, informed by our own replication attempts.

Williams College – Human-AI Interaction Lab

Williamstown, MA

Computer Science Research Assistant (*Advisor:* Iris Howley)

2019 – 2022

- Built interactive tutors for Bayesian Knowledge Tracing, an AI algorithm that predicts skill mastery, using JavaScript and Unity (catherinesyeh.github.io/bkt-asl and [bkt-balloon](https://catherinesyeh.github.io/bkt-balloon)).
- Developed a novel, evidence-based framework for explainable AI [3] using cognitive task analysis, user-centered design, and learning theory.

Williams College – Concepts & Categories Lab

Williamstown, MA

Cognitive Science Research Assistant (*Advisor:* Safa Zaki)

2018 – 2019

- Designed, executed, and analyzed experiments using eye-tracking technology and computer algorithms.
- Studied the relationship between active / passive learning and interleaving / blocking effects in categorization tasks.

PUBLICATIONS

- [1] Yeh, C., Ramos, G., Ng, R., Huntington, A., & Banks, R. (In submission). GhostWriter: Augmenting Collaborative Human-AI Writing Experiences Through Personalization and Agency.
- [2] Yeh, C., Chen, Y., Wu, A., Chen, C., Viégas, F., & Wattenberg, M. (2023). AttentionViz: A Global View of Transformer Attention. *IEEE Visualization Conference*. ieeexplore.ieee.org/document/10297591
- [3] Yeh, C., Cowit, N., & Howley, I. (2023). Designing for Student Understanding of Learning Analytics Algorithms. *International Conference on Artificial Intelligence in Education*. link.springer.com/chapter/10.1007/978-3-031-36272-9_43
- [4] Yeh, C., Dernoncourt, F., & Lipka, N. (2023). Envisioning the Next-Gen Document Reader. *AAAI Workshop on Scientific Document Understanding*. doi.org/10.48550/arXiv.2302.07492
- [5] Butler, J., & Yeh, C. (2022). Walk a Mile in Their Shoes: The Covid Pandemic Through the Lens of Four Tech Workers. *Communications of the ACM*. dl.acm.org/doi/10.1145/3561989
Also featured in *ACM Queue*: dl.acm.org/doi/10.1145/3534860

TEACHING EXPERIENCE

Harvard University

2023 – Present

Research Topics in Human-Computer Interaction (COMPSCI 279R)

Williams College

2019 – 2022

Principles of Programming Languages (CSCI 334), Computational Biology (CSCI 315), Algorithm Design & Analysis (CSCI 256), Data Structures & Advanced Programming (CSCI 136)

INDUSTRY EXPERIENCE

Oracle Cloud Infrastructure (OCI)

Software Engineer Intern, *Summer 2020*

Sunshine

Software Engineer Intern, *Winter 2020*

HONORS & AWARDS

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|-------------|---|
| 2024 | National Science Foundation Graduate Research Fellow
Kempner Institute Graduate Fellow |
| 2022 | Sigma Xi International Scientific Research Honor Society Inductee
CRA Outstanding Undergraduate Award Runner Up |
| 2021 | NCWIT Collegiate Award Finalist
Adobe Research Women-in-Technology Scholarship Finalist
Phi Beta Kappa National Honor Society Junior Year Inductee (top 5% of class)
Grace Hopper Conference ACM Student Research Competition Finalist |

Williams College Ward Prize Finalist

2019 Williams College Computer Science Class of 1960s Scholar (2019 – 2022)
National USCLAP Statistics Competition 3rd Place Winner
Williams College Summer Science Research Fellow
Grace Hopper Conference Scholar

2018 Williams College Dean's List (2018 – 2022)

SERVICE

Reviewer

ACM DIS (2024)

Mentor – Research

Vicki Xu, *Harvard '23*: logit lens on vision transformer
Cynthia Chen, *Harvard '24*: transformer interpretability

Volunteer

IEEE VIS Student Volunteer (2023)

Mentor – Other

Harvard SEAS Research Mentor (2024 – Present)
Harvard Women in STEM (2022 – Present)
Williams Underrepresented Identities in CS (2020-2022)

SKILLS & INTERESTS

Technical Skills

- *Programming Languages*: Java, Python, C, JavaScript, Typescript, HTML, CSS, SQL, R, F#, Lisp, Unity, Swift
- *Libraries*: Pandas, NumPy, Matplotlib, SciPy, Scikit-Learn, PyTorch, TensorFlow, React, D3, Plotly
- *Frameworks*: Flask, Vue, LangChain, Flutter, Svelte, Meteor, Deck.gl

Other Interests

- Art & Design (catherinesyeh.github.io/#/art)