

# CATHERINE CHEN

she/her/hers ◊ Updated May 2025  
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## RESEARCH INTERESTS

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interpretability/explainability, information retrieval, natural language processing, large language models, human-centered AI, biomedical applications of ML

## EDUCATION

### Brown University

*Ph.D Candidate in Computer Science*

*Sc.M in Computer Science*

Advised by Carsten Eickhoff (now University of Tübingen)

Providence, RI, USA

*Sept 2021 - Present*

*May 2023*

### University of Amsterdam

*Visiting Researcher*

Hosted by Maarten de Rijke (IR Lab)

Amsterdam, Netherlands

*Feb - May 2025*

### Wellesley College

*B.A. in Computer Science and French*

Wellesley, MA, USA

*Aug 2015 - May 2019*

### Aix-Marseille University

*Study Abroad*

Aix-en-Provence, France

*Aug 2017 - Jan 2018*

## PUBLICATIONS

- Meng Lu, **Catherine Chen**, and Carsten Eickhoff. *Cross-Encoder RedisCOVERS a Semantic Variant of BM25*. Preprint. arXiv:2502.04645.
- Gregory Polyakov, **Catherine Chen**, and Carsten Eickhoff. *Towards Best Practices in Axiomatic Activation Patching in Information Retrieval*. To appear in SIGIR 2025.
- Andrew Parry, **Catherine Chen**, Carsten Eickhoff, and Sean MacAvaney. *MechIR: A Mechanistic Interpretability Framework for Information Retrieval*. ECIR 2025.
- **Catherine Chen**, Jack Merullo, and Carsten Eickhoff. *Axiomatic Causal Interventions for Reverse Engineering Relevance Computation in Neural Retrieval Models*. SIGIR 2024.
- **Catherine Chen** and Carsten Eickhoff. *Evaluating Search System Explainability with Psychometrics and Crowdsourcing*. SIGIR 2024.
- William Rudman, **Catherine Chen**, and Carsten Eickhoff. *Outlier Dimensions Encode Task Specific Knowledge*. EMNLP 2023.
- **Catherine Chen**. *Quantifying and Advancing Information Retrieval System Explainability*. SIGIR 2023.

## WORK EXPERIENCE

### Centre for the Governance of AI

*Summer Fellow*

London, UK

*June - Aug 2025*

- Researching projects related to the responsible development, regulation, and governance of AI systems

### Blue Cross and Blue Shield of Minnesota

*Data Science PhD Intern, AI Models and Platform Team*

Remote

*June - Sept 2024*

- Developed an end-to-end pipeline leveraging LLMs using AWS services (Sagemaker, Bedrock, S3) for automated Behavioral Health case summarization

### FreeWheel, A Comcast Company

*Software Engineer, Creative Team*

New York, NY, USA

*Aug 2019 - Aug 2021*

- Created UI components for a React-based web application with service-oriented backend architecture containerized with Docker and Kubernetes, allowing media buyers/sellers to manage their ad inventory
- Implemented APIs in Golang with gRPC to ingest/manage advertising creatives stored in AWS S3/MySQL DB

**PatientsLikeMe**  
*Software Engineering Intern*

Cambridge, MA, USA  
June - Aug 2018

- Wrote code using Ruby on Rails and React for a monolithic web app that comprises the world's largest personalized health network, helping people with chronic illnesses connect with one another and find new treatments

**University of Massachusetts, Amherst**  
*Research Assistant, Knowledge Discovery Lab*

Amherst, MA, USA  
June - Aug 2017

- Reverse-engineered Google Deepmind's DQN to identify influential neurons to explain how the network learned to play Atari Breakout

## MENTORSHIP

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**Master's Students**

Meng Lu - Brown University  
Kora Helm - University of Tübingen

July 2024 - Present  
Sept 2023 - July 2024

**Undergraduate Students**

Pearl Zhang – Swarthmore College – with Jeff Huang  
Yuhan Wang – Smith College – with Jeff Huang  
Lucas Weissman – Williams College – with Roma Patel  
Marwa Bouabid – Mount Holyoke – with James Tompkin

Jan - May 2023  
Jan - May 2023  
June - Aug 2022  
Jan - May 2022

## TEACHING

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**Brown University**

CSCI 1460: Computational Linguistics, *Graduate TA*  
Sheridan Center for Teaching and Learning, *Teaching Certificate I*  
NSF REU: AI for Computational Creativity, *Research Methods Study Group Leader*

Sept - Dec 2024  
Sept - Dec 2023  
June - Aug 2022, 2023

**Wellesley College**

CS 235: Theory of Computation, *Supplemental Instructor*

Sept - Dec 2018

## INVITED TALKS

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**Reverse Engineering Mechanisms of Relevance in Neural IR Models**

*University of Amsterdam*  
*Radboud University*  
*Leiden University*

May 2025  
May 2025  
April 2025

**Advancing Explainable Information Retrieval: Methods for Human-Centered Evaluation and Interpreting Neural IR Models**

*University of Glasgow*

Sept 2024

**Choosing Between Industry and Academia**

*Brown University*, ExploreCSR: Diversity in Computer Systems

April 2023

**Women in STEM Workshop: Pursuing a Career in CS**

*The Stemistry Project*

Feb 2023

## LEADERSHIP/SERVICE

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**Faculty-Grad Liason**  
*Department of Computer Science*

Brown University  
Fall 2024 - Present

- Communicate with the department about graduate student affairs/concerns and coordinate student volunteer positions

**CS Department Representative**  
*Graduate Student Council*

Brown University  
Sept 2022 - May 2024

- Attended monthly meetings to facilitate collective action on graduate student-related issues

## **Graduate Student Orientation and Recruitment**

*Department of Computer Science*

Brown University  
*Jan 2022 - March 2024*

- Collaborated with department administrators to organize welcome events for admitted/incoming students

## **Graduate Community Fellow**

*Graduate School*

Brown University  
*Sept 2022 - May 2023*

- Designed and implemented community-building initiatives for Women and Non-Binary Graduate Students to celebrate diversity, promote belonging and inclusion, and connect individuals across disciplines

## **Co-Organizer**

Workshop on Explainability in Information Retrieval (WExIR) @ SIGIR '25  
New England NLP Meetup

*July 2025*  
*April 2024*

## **Conference Reviewer**

Actionable Interpretability Workshop  
ACL Rolling Review (*EMNLP '24 Outstanding Reviewer*)  
ECIR  
SIGIR  
WSDM

*2025*  
*2024, 2025*  
*2024, 2025*  
*2024, 2025*  
*2025*

## **Panelist**

Amplify: Students as Leaders: At Wellesley and Beyond  
Wellesley CS Club: Wellesley Careers in Tech Panel  
AlumConnect: Research at Wellesley  
AI/ML Panel at Hack @ Brown  
Why Wellesley? An AlumConnect Admissions Panel  
Grad Student Discussion Panel for REU AI @ Brown  
Demystifying Grad School: Conversations with CS Grad Students @ Brown  
Brown CS Grad School Info Panel

*Oct 2024*  
*April 2024*  
*Feb 2024*  
*Feb 2024*  
*April 2023*  
*Aug 2022*  
*Mar 2022*  
*Nov 2021*

## **Moderator**

Grad Student Discussion Panel for REU AI @ Brown  
Grad Student Discussion Panel for ExploreCSR AI @ Brown  
Women and Non-Binary Faculty Panel @ Brown

*Aug 2023*  
*Apr 2023*  
*Mar 2023*

## **Other Service**

Max Planck Institute for Intelligent Systems PhD Application Reader  
Brown CS PhD Application Reader  
Grad Student Mentor for Brown University Grad School Cohort  
Alumnae Mentor for Wellesley College Senior Support Network  
Alumnae Interviewer for Wellesley College Admissions

*Nov 2024*  
*Jan 2024*  
*Sept 2023 - May 2024*  
*Sept 2020 - May 2022*  
*Sept 2020 - Jan 2020*

## **AWARDS**

Research Mobility Fellowship, Brown University  
Graduate Community Fellow, Brown University

*Spring 2025*  
*Fall 2022 - Spring 2023*

## **SKILLS**

<b>Programming Practices/Tools</b>	Python, React, JavaScript, Golang, Ruby on Rails, MySQL, HTML, CSS PyTorch, Git, Pandas, AWS Services (Bedrock, Sagemaker, S3), Docker, Kubernetes, Flask, Jira, Confluence, Agile, Scrum
<b>Languages</b>	English, French