

# CATHERINE CHEN

she/her/hers ◇ Updated Jan 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

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### University of Amsterdam

*Visiting Researcher, IRLab*

Hosted by Maarten de Rijke

Amsterdam, Netherlands

*Feb - May 2025*

### 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*

### 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

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- Jennifer Lu, **Catherine Chen**, and Carsten Eickhoff. *Title not listed for anonymity*. In submission to SIGIR 2025.
- Andrew Parry, **Catherine Chen**, Carsten Eickhoff, and Sean MacAvaney. *MechIR: A Mechanistic Interpretability Framework for Information Retrieval*. To appear in 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

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### 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 CNN to identify influential neurons to explain how the network learned to play Atari Breakout

## MENTORSHIP

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### Master's Students

Jennifer Lu - Brown University

July 2024 - Present

Kora Helm - University of Tübingen

Sept 2023 - July 2024

### Undergraduate Students

Pearl Zhang - Swarthmore College - with Jeff Huang

Jan - May 2023

Yuhan Wang - Smith College - with Jeff Huang

Jan - May 2023

Lucas Weissman - Williams College - with Roma Patel

June - Aug 2022

Marwa Bouabid - Mount Holyoke - with James Tompkin

Jan - May 2022

## TEACHING

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### Brown University

CSCI 1460: Computational Linguistics, *Graduate TA*

Sept - Dec 2024

Sheridan Center for Teaching and Learning, *Teaching Certificate I*

Sept - Dec 2023

NSF REU: AI for Computational Creativity, *Research Methods Study Group Leader*

June - Aug 2022, 2023

### Wellesley College

CS 235: Theory of Computation, *Supplemental Instructor*

Sept - Dec 2018

## INVITED TALKS

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

Glasgow IR Group Seminar, *University of Glasgow*

Sept 2024

### Choosing Between Industry and Academia

ExploreCSR: Diversity in Computer Systems, *Brown University*

April 2023

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

The Stemistry Project

Feb 2023

### Using Machine Learning to Predict Startup Success

Ruhlman Conference, *Wellesley College*

May 2019

### Artificial Intelligence: From Fiction to Reality

Ruhlman Conference, *Wellesley College*

May 2018

## 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 create a schedule of events to welcome admitted/incoming students
- Created and managed messaging hubs (Discord, Slack) to correspond with admitted/incoming graduate students
- Organized social events to introduce admitted/incoming students to current 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

New England NLP Meetup

*April 2024*

## Conference Reviewer

ACL Rolling Review (*EMNLP '24 Outstanding Reviewer*)

*2024, 2025*

ECIR

*2024, 2025*

SIGIR

*2024, 2025*

WSDM

*2025*

## Panelist

Amplify: Students as Leaders: At Wellesley and Beyond

*Oct 2024*

Wellesley CS Club: Wellesley Careers in Tech Panel

*April 2024*

AlumConnect: Research at Wellesley

*Feb 2024*

AI/ML Panel at Hack @ Brown

*Feb 2024*

Why Wellesley? An AlumConnect Admissions Panel

*April 2023*

Grad Student Discussion Panel for REU AI @ Brown

*Aug 2022*

Demystifying Grad School: Conversations with CS Grad Students @ Brown

*Mar 2022*

Brown CS Grad School Info Panel

*Nov 2021*

## Moderator

Grad Student Discussion Panel for REU AI @ Brown

*Aug 2023*

Grad Student Discussion Panel for ExploreCSR AI @ Brown

*Apr 2023*

Women and Non-Binary Faculty Panel @ Brown

*Mar 2023*

## Other Service

Max Planck Institute for Intelligent Systems PhD Application Reader

*Nov 2024*

Brown CS PhD Application Reader

*Jan 2024*

Grad Student Mentor for Brown University Grad School Cohort

*Sept 2023 - May 2024*

Alumnae Mentor for Wellesley College Senior Support Network

*Sept 2020 - May 2022*

Alumnae Interviewer for Wellesley College Admissions

*Sept 2020 - Jan 2020*

## AWARDS

Research Mobility Fellowship, Brown University

*Spring 2025*

Graduate Community Fellow, Brown University

*Fall 2022 - Spring 2023*

## SKILLS

### Programming

Python, React, JavaScript, Golang, Ruby on Rails, MySQL, HTML, CSS

### Practices/Tools

PyTorch, Git, Pandas, AWS Services (Bedrock, Sagemaker, S3), Docker, Kubernetes, Flask, Jira, Confluence, Agile, Scrum

### Languages

English, French