

# WARREN “CHASE” CARSTENSEN IV

Machine Learning and Mathematics Researcher

✉ [chase.carstensen@outlook.com](mailto:chase.carstensen@outlook.com) [in linkedin.com/in/warren-carstensen](https://www.linkedin.com/in/warren-carstensen) [chasecarstensen.com](https://chasecarstensen.com)

## Education

---

### Worcester Polytechnic Institute

*Master of Science in Computer Science*

Worcester, MA

August 2026-May 2027

### Worcester Polytechnic Institute

*Dual Bachelors of Science in Computer Science and Mathematical Sciences, 3.93 GPA*

Worcester, MA

August 2022-May 2026

- **Extracurricular Activities:** WPI Jazz Groups
- **Awards:** Dean’s List Fall 2022-Spring 2026, Charles O. Thompson Scholar Designation
- **Graduation Honors:** High Distinction

## Research Experience

---

### Major Qualifying Project

*Advisors: Prof. Daniel Reichman and Prof. Gabor Sarkozy*

Worcester, MA

August 2025-March 2026

- **Award: Honorable Mention, Provost’s Award for Best MQP**
- Project: *AI-in-the-Box: Generating Snake-in-the-Box Constructions with Neural Networks*
- Using heuristic search techniques (tabu search) and reinforcement learning (cross-entropy method, PatternBoost) to generate constructions for the snake-in-the-box problem.
- Developed the first neural methods for this task.

### Independent Study Project

*Advisor: Prof. Walter Gerych*

Worcester, MA

August 2025-January 2026

- Project: *Efficient and Minimally Invasive Debiasing of Pre-Trained Multi-Modal Models*
- Joined Prof. Walter Gerych’s TrustAI lab.
- Studied test-time model debiasing techniques using activation space manipulation.
- Reproduced a state-of-the-art debiasing approach and assessed its effects on non-target attribute bias.

### CU Natural Language Processing REU

*Advisor: Prof. Jugal Kalita*

Colorado Springs, CO

May 2025-August 2025

- Project: *Using Large Language Models to Generate Counterexamples in Graph Theory*
- Developed two datasets of false graph theoretic claims, one simple and one challenging.
- Benchmarked the ability of LLMs to generate counterexamples to claims in our datasets, and compared these results to existing heuristics and guided searches.

### WPI Data Science REU

*Advisor: Prof. Elke Rundensteiner*

Worcester, MA

May 2024-August 2024

- Project: *MInDS: Using Large Language Models to Screen for Depression*
- Used LLMs to develop methods for automated depression screening.
- Developed a greedy algorithm for interview paraphrasing.
- Developed a tool for evaluating the depression screening capabilities of models, which is in use by members of the DAISY lab.

## Publications

---

- [1] C. Carstensen and J. Kalita, “Using large language models to generate claims and counterexamples in graph theory,” in *Recent Advances in Natural Language Processing*, 2025, p. 12.
- [2] C. Carstensen, N. Small, J. Bhaskar, B. Lopez, A. Shrestha, and E. A. Rundensteiner, “Minds: Using large language models to screen for depression,” in *2024 IEEE MIT Undergraduate Research Technology Conference (URTC)*, 2024, pp. 1–5. DOI: 10.1109/URTC65039.2024.10937571.

## Presentations

---

- **Using Large Language Models to Generate Counterexamples in Graph Theory**, VAST Lab, CU (*Colorado Springs, CO, August 2025*)
- **MInDS: Using Large Language Models to Screen for Depression**, IEEE MIT Undergraduate Research Technology Conference, MIT (*Cambridge, MA, October 2024*)
- **MInDS: Using Large Language Models to Screen for Depression**, DAISY Lab, WPI (*Worcester, MA, September 2024*)

## Academic Experience

---

### WPI Math Department

Worcester, MA

*Peer Learning Assistant*

*August 2023 - May 2026*

- Led weekly discussion periods and held office hours for classes of ~35 students.
- Worked a weekly shift in the Math Tutoring Center.
- Graded assignments and exams.
- Worked with multiple Professors, TAs, and other PLAs for Calculus I-IV, Theoretical Calculus III-IV, and Graph Theory.

### Pi Mu Epsilon, Massachusetts Alpha

Worcester, MA

*President - Advisor: Prof. Brigitte Servatius*

*September 2024 - May 2026*

- Led WPI's chapter of the National Mathematics Honors Society, Pi Mu Epsilon.
- Rebuilt this dormant organization by restructuring the executive board, improving the application and induction process, and re-establishing campus presence.
- Organized and Hosted the first annual WPI Undergraduate Mathematics Symposium.

### Upsilon Pi Epsilon, Massachusetts Alpha

Worcester, MA

*Events Coordinator - Advisor: Prof. Craig Wills*

*January 2025 - March 2026*

- Assisted the Career Officer in planning UPE's annual honor society career fair.
- Planned all organizational events and coordinated member volunteering.

## Awards

---

- **Honorable Mention, Provost's Award**, *May 2026*, for best Major Qualifying Project in the Computer Science department
- **Meritorious Senior Award**, *May 2026*, for outstanding academic performance in the Mathematical Sciences department
- **CRA Travel Grant**, *October 2024*, to present at the MIT Undergraduate Research Technology Conference