

Alexander Heckett

 aheckett.com |  [bushwallyta271828](https://github.com/bushwallyta271828) |  aheckett@gmail.com

EDUCATION

2026-	PhD in Computer Science	Carnegie Mellon University	
2021-2026	MS in Mathematical Sciences	Carnegie Mellon University	QPA: 3.93/4.0
	BS in Mathematical Sciences		
	Minor in Computer Science		

RESEARCH

Multi-Agent Mathematics Collaboration Fall 2025 - present
Working with Vincent Conitzer to find mechanisms that encourage multi-agent collaboration in mathematics.

Estimating Action Availability Using Games Summer 2024 - Fall 2025
Worked with Vincent Conitzer on a theoretical model of AI Safety via Debate. We constructed an abstract game-theoretic model of debate and proved computational hardness results and error bounds for this model.

Effects Of Computational Boundedness On Debate Fall 2022 - Spring 2023
Worked with Kevin Zollman to study a theoretical model of debaters in an argumentation tree where one debater's computational disadvantage compared to the other debater is modeled as having restricted access to nodes in the tree.

Score Matching Error Bounds Fall 2021 - Fall 2022
Worked with Andrej Risteski and Frederic Koehler to establish bounds (and construct counterexamples to better bounds) on the error of score matching for estimating parameters of exponential families of distributions. We established a connection to isoperimetric inequalities. Our publication was listed as notable top 5% at ICLR 2023.

GENERAL EXPERIENCE AND PERSONAL PROJECTS

Carnegie AI Safety Initiative Co-Founder
Co-founded Carnegie Mellon's AI Safety club. Helped with various administrative tasks for two years, including co-running reading groups and a brief stint as de-facto president.

LogicGraph Project
Worked on a debate program, LogicGraph, where users can enumerate claims which impose logical constraints on other claims. LogicGraph used SAT solving to estimate correlations between claims and direct debaters towards structural weaknesses in opposing arguments.

Mojo Vision Junior Engineer
Took a gap year between high school and college to work at a startup. Tackled hands-on mechanical and software engineering problems as part of the display team.

AWARDS

Richard A. Moore Award	2025
CMU Mellon College of Science Dean's List, High Honors	2024, 2025
Putnam Top 200	2022
CMU School of Computer Science Dean's List, High Honors	2021, 2022

GRADUATE COURSEWORK

Functional Analysis

Topology

Model Theory

Probability and Logic

Spectral Graph Theory

Algebraic Topology

Advanced Real Analysis

Differential Equations

Descriptive Set Theory

Discrete Mathematics

Methods of Optimization

Functional and Geometric Inequalities

PUBLICATIONS AND PREPRINTS

- [1] **Alexander Heckett** and Vincent Conitzer. *Designing Rules for Choosing a Winner in a Debate*. 2025. arXiv: [2511.23454](https://arxiv.org/abs/2511.23454) [cs.GT]. URL: <https://arxiv.org/abs/2511.23454>.
- [2] Frederic Koehler, **Alexander Heckett**, and Andrej Risteski. *Statistical Efficiency of Score Matching: The View from Isoperimetry*. 2022. arXiv: [2210.00726](https://arxiv.org/abs/2210.00726) [cs.LG]. URL: <https://arxiv.org/abs/2210.00726>.