# Liam O'Carroll

ocarroll@stanford.edu
https://liamocarroll.github.io/

## EDUCATION

**Stanford University** — Stanford, CA
*Ph.D. in Computer Science, Advisor: Aaron Sidford* — Sept. 2023 - Present
GPA: 4.23/4.3 (A+ = 4.3)
Selected coursework: Optimization Algorithms, Deep Reinforcement Learning

**Northwestern University** — Evanston, IL
*Bachelor of Science in Computer Science and Mathematics (double major)* — Sept. 2019 - June 2023
Summa Cum Laude, GPA: 3.98/4
Selected coursework: Algorithms for Big Data, Theoretical Foundations of Data Science, Machine Learning

## PUBLICATIONS

In my field, author names are ordered alphabetically.

1. Ishani Karmarkar, **Liam O'Carroll**, Aaron Sidford. Solving Zero-Sum Games with Fewer Matrix-Vector Products. *FOCS 2025.*
2. Yair Carmon, Arun Jambulapati, **Liam O'Carroll**, Aaron Sidford. Extracting Dual Solutions via Primal Optimizers. *ITCS 2025.* Available at https://arxiv.org/abs/2412.02949
3. **Liam O'Carroll**, Vaidehi Srinivas, Aravindan Vijayaraghavan. The Burer-Monteiro SDP method can fail even above the Barvinok-Pataki bound. *NeurIPS 2022.* Available at https://arxiv.org/abs/2211.12389

## HONORS

**NSF GRFP Honorable Mention** — Spring '25
**Outstanding Senior Award,** Northwestern University Computer Science Department — Spring '23
**NeurIPS 2022 Scholar Award** — Fall '22
**Tau Beta Pi,** Northwestern University — Fall '21
**Outstanding Peer Mentor Award,** Northwestern University Computer Science Department — Winter '21
Award amount: $300
Given for excellence as an undergraduate teaching assistant and peer mentor.

## RESEARCH AND PROFESSIONAL EXPERIENCE

**Research Rotation,** Stanford University — Fall '23
- Topic: Machine learning theory (memory/sample trade-offs)
- Advisor: Gregory Valiant

**Research Intern,** University of Illinois Urbana-Champaign — Summer '22
- Topic: Deep learning theory and stochastic gradient methods
- Advisor: Matus Telgarsky

**Research Intern,** Northwestern University — June '20 - May '22
- Topic: Semidefinite programming and optimization algorithms
- Advisor: Aravindan Vijayaraghavan

**Software Engineering Intern,** Select Rehabilitation, Inc., Glenview, IL — Summer '19, Summer '18
- Created document visualizer for NLP pipeline

## GRADUATE TEACHING ASSISTANT EXPERIENCE

**CS 369O/MS&E 312/CME 334 Optimization Algorithms,** Stanford University — Fall '24
**MS&E 111X/211X Introduction to Optimization (Accelerated),** Stanford University — Spring '25

## UNDERGRADUATE COURSE PEER MENTOR EXPERIENCE

**Design and Analysis of Algorithms,** Northwestern University — Fall '21, Fall '20
**Mathematical Foundations of Computer Science,** Northwestern University — Winter '22, Winter '21, Spring '20
**Intro to the Theory of Computation,** Northwestern University — Spring '22
**Economics of Networks,** Northwestern University — Spring '21

## MENTORING/SERVICE

**Stanford CS Mentoring Program Graduate Mentor,** Stanford Computer Science Department — Oct. ’23 - June ’25
- Year-long mentorship program to engage undergraduate students in research at Stanford.

**Stanford Splash Teacher,** Stanford University — Fall ’23, Fall ’24, Spring ’24
- Taught hundreds of local high school students information theory.

**Application Review Volunteer,** Stanford Computer Science Student-Applicant Support Program — Fall ’23
- Application feedback program for prospective PhD students to increase accessibility.

**Research Peer Mentor,** Northwestern University Office of Undergraduate Research — Summer ’22
- Mentored a cohort of undergraduates as they completed summer research projects.

## CONFERENCE TALKS

**“Extracting Dual Solutions via Primal Optimizers,”** ITCS 2025 — Jan. ’25

**“The Burer-Monteiro SDP Method Can Fail Even Above the Barvinok-Pataki Bound” (Link),** NeurIPS 2022 — Oct. ’22

## TECHNICAL SKILLS

**Programming Languages:** Python, MATLAB, C++, C, Ruby, JavaScript, Java
**Python Libraries:** PyTorch, NumPy, pandas, scikit-learn, CVXPY, Matplotlib, Seaborn