Liam O'Carroll

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EDUCATION

Stanford University Stanford, CA Sept. 2023 - June 2028 (exp.) Ph.D. in Computer Science, Advisor: Aaron Sidford GPA: 4.23/4.3 (A+ = 4.3) Selected coursework: Deep Reinforcement Learning, Optimization Algorithms **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: Machine Learning, Algorithms for Big Data, Reliability and Robustness in Machine Learning **PUBLICATIONS** In my field, author names are ordered alphabetically. See my website for brief descriptions. 1. Annie Marsden, Liam O'Carroll, Aaron Sidford, Chenyi Zhang, Isotropic Noise in Stochastic and Quantum Convex Optimization. NeurIPS 2025. 2. Ishani Karmarkar, Liam O'Carroll, Aaron Sidford. Solving Zero-Sum Games with Fewer Matrix-Vector Products. FOCS 2025. Available at http://arxiv.org/abs/2509.04426 3. 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 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 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 Fall '23 Research Rotation, Stanford University • 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 • 2018: NumPy and pandas project, 2019: Ruby on Rails project

Fall '25

Fall '24

Spring '25

GRADUATE TEACHING ASSISTANT EXPERIENCE

CS 369O/MS&E 312/CME 334 Optimization Algorithms, Stanford University

MS&E 111X/211X Introduction to Optimization (Accelerated), Stanford University

CS 229 Machine Learning, Stanford University

UNDERGRADUATE COURSE PEER MENTOR EXPERIENCE

Design and Analysis of Algorithms, Northwestern University
Mathematical Foundations of Computer Science, Northwestern University
Intro to the Theory of Computation, Northwestern University
Economics of Networks, Northwestern University
Spring '22
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" (<u>Link</u>), 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