

EDUCATION

Northwestern University

Ph.D. in Engineering Sciences and Applied Mathematics

Advisor: *Diego Klabjan, Industrial Engineering and Management Sciences*

Evanston, IL

2021–2026

California Institute of Technology

B.S. in Applied and Computational Mathematics

Pasadena, CA

2016–2020

RESEARCH INTERESTS

Machine learning, reinforcement learning, nonconvex optimization, stochastic optimization, gradient-based algorithms, AI safety, differential privacy, machine unlearning, low-rank training

PUBLICATIONS AND PREPRINTS

- [1] S. Mu and D. Klabjan, “On the convergence rate of LoRA gradient descent”, 2025. arXiv: [2512.18248](#) [cs.LG].
- [2] S. Mu and D. Klabjan, “Descend or rewind? Stochastic gradient descent unlearning”, 2025. arXiv: [2511.15983](#) [cs.LG].
- [3] S. Mu and D. Klabjan, “Rewind-to-delete: Certified machine unlearning for nonconvex functions”, *The Thirty-ninth Annual Conference on Neural Information Processing Systems*, 2025, [\[link\]](#).
- [4] S. Mu and D. Klabjan, “On the second-order convergence of biased policy gradient algorithms”, *Forty-first International Conference on Machine Learning*, 2024, [\[link\]](#).
- [5] M. Ahlers, M. Bustamante, and S. Mu, “Unitarity bounds of astrophysical neutrinos”, *Physical Review D*, vol. 98, no. 12, 2018, [\[link\]](#).

SKILLS

Python (PyTorch, TensorFlow, Numpy, Pandas), MATLAB, C, C++, SQL, high-performance computing, bash, Kubernetes, JavaScript, R

ADDITIONAL EXPERIENCE

Los Alamos National Laboratory

Cybersecurity Summer School Research Intern

Mentor: *Juston Moore*

Out-of-of distribution detection via neural tangent kernel methods

Los Alamos, NM

Summer 2024

Nordstrom

Data Science Intern

Combining prompt engineering with GPT-3 and UI/UX design to create a tool for generating clothing product descriptions

Seattle, WA

Summer 2021

UCLA/Caltech Summer Undergraduate Research Fellowship <i>Mentors: Franca Hoffmann, Mason Porter, Heather Zinn-Brooks</i> <i>Utilizing mean-field approximations to model the effect of mixing patterns on disease spread</i>	Pasadena, CA Summer 2020
BlackRock Summer Analyst (Portfolio Analytics Group)	New York, NY Summer 2019
Niels Bohr Institute Summer Undergraduate Research Fellowship <i>Mentors: Markus Ahlers and Mauricio Bustamante</i> <i>Modeling astrophysical neutrino flavor oscillations based on new physics theories</i>	Copenhagen, DNK Summer 2018
NYU MRSEC Research Experience for Undergraduates <i>Mentor: David Grier</i>	New York, NY Summer 2017

TEACHING

- Advanced Algorithms for Machine Learning Fall 2024, Fall 2025
Developing slides and homework source code, office hours, grading, as the only full TA for a class of ~25 graduate students
Project topics: Policy Gradient, Deep Q-Networks, Federated Learning, Automated Feature Engineering
- Generating Business Value with Analytics Winter 2024
Grading for a class of ~20 graduate students
- Multi-variable Calculus Spring 2023
Leading lab sessions, office hours, grading, as one of 2 TAs for a class of ~80 undergraduate students
- Differential Equations Fall 2022
Leading lab sessions, office hours, grading, as one of 4 TAs for a class of ~100 undergraduate students
- Introduction to Probability Models (Caltech) Fall 2019
Office hours, grading, as one of 5 TAs for a class of ~100 undergraduate students

LEADERSHIP AND SERVICE

- Institute of Industrial and Systems Engineers (IISE) Annual Conference 2026
Modeling & Simulation Track Session Chair
- IEEE Transactions on Neural Networks and Learning Systems 2025
Reviewer
- The Thirty-Ninth Annual Conference on Neural Information Processing Systems 2025
Reviewer
- Society for Industrial and Applied Mathematics (SIAM) [Northwestern Student Chapter](#) 2023–2025
President
Responsibilities: Organize meetings and events, coordinate payments, recruit members, recruit volunteers to help with events, interface with administration and other SIAM Chapters
Some events: Chicago Area SIAM Student Conference (CASSC25), Argonne National Laboratory Field Trip, collaborative events with INFORMS, weekly SIAM Journal Club, Undergrad Boba Networking
- Northwestern M.S. in Machine Learning and Data Science Program Winter 2025
Admissions application reviewer
- Northwestern Women in Mathematics (WIM) 2023–2025
Member

OTHER CONFERENCES

- INFORMS Annual Meeting in Atlanta, Georgia 2025
Invited talk: “Gradient-based methods for machine unlearning”
- SIAM Annual Meeting in Montreal, Canada 2025

AWARDS

- Northwestern Presidential Fellowship Nominee 2025
Sole nominee from the ESAM department
- SIAM Student Chapter Certificate of Recognition 2024
“Acknowledging Siqiao Mu for exceptional service to the Northwestern University Student Chapter during the 2023-2024 academic year”
- NSF Graduate Research Fellowship Program Honorable Mention 2023