

Tong Ding

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Employment

University of Illinois Urbana–Champaign (UIUC) June 2026–present
Siebel School of Computing and Data Science
Postdoctoral Research Associate (Mentor: Edgar Solomonik)

Education

Purdue University, West Lafayette, IN August 2019–May 2026
Ph.D. in Mathematics
Advisor: Jianlin Xia; Thesis: Matrix Computations for Training Shallow Neural Networks

Purdue University, West Lafayette, IN August 2015–May 2019
B.S. in Mathematics

Publications & Preprints

- Z. Cai, **T. Ding**, M. Liu, and J. Xia. *Matrix Analysis from Shallow ReLU Neural Network Least-Squares Approximations*. In preparation. 2026
- Z. Cai, **T. Ding**, M. Liu, X. Liu, and J. Xia. *A Structure-Guided Gauss–Newton Method for Shallow ReLU Neural Networks*. [arXiv:2404.05064](#) 2024

Conferences & Workshops

Talks

- Why Neural Network Optimization Matrices Are Ill-Conditioned and Why That’s Okay*. Workshop on Network Algorithms, Analysis, and Learning for Science. Berkeley, CA. November 2025
- Matrix Analysis and Fast Solvers in Neural Networks*. SIAM Central States Section Annual Meeting (minisymposium). Fayetteville, AR. October 2025
- Why Neural Network Optimization Matrices Are Ill-Conditioned and Why That’s Okay*. Scientific Machine Learning: Theory, Algorithms, and Applications. West Lafayette, IN. September 2025
- Matrix Analysis for Shallow ReLU Neural Network Least-Squares Approximations*. 22nd Copper Mountain Conference on Multigrid Methods. Copper Mountain, CO. April 2025
- A Structure-Guided Gauss–Newton Method for Shallow ReLU Neural Networks*. International Conference on Preconditioning (minisymposium). Atlanta, GA. June 2024

Posters

- ICERM Workshop on Randomized Numerical Linear Algebra. Providence, RI. February 2026
- CBMS Conference on Research at the Interface of Applied Mathematics and Machine Learning. Houston, TX. December 2025
- NSF Computational Mathematics PI Meeting. Salt Lake City, UT. May 2025
- NSF Computational Mathematics PI Meeting. Seattle, WA. July 2024

Teaching

Guest Lecturer, Department of Mathematics, Purdue University Spring 2025

- Delivered guest lectures in MA 303: Differential Equations and Partial Differential Equations for Engineering and the Sciences; prepared materials and facilitated discussions for undergraduate students.

Teaching Assistant, Department of Mathematics, Purdue University

- MA 16600: Calculus II — held weekly recitations; office hours. Spring 2020

Graduate Grader, Department of Mathematics, Purdue University [semesters]

- MA 52700: Advanced Mathematics for Engineers; MA 35100: Linear Algebra; MA 45000: Abstract Algebra.

Honors & Awards

- Travel awards: SIAM Central States Section Annual Meeting 2025
- CBMS-AMML Workshop (University of Houston) travel support 2025
- Purdue Graduate Student Government travel support 2025
- T. T. Moh Graduate Scholarship Fund, Purdue University 2019, 2024
- Spira Undergraduate Research Award, Purdue University 2019
- Jandos Scholarship, Purdue University 2018
- Jean E. Rubin Memorial Scholarship, Purdue University 2017, 2018

Professional Activities

President, SIAM Student Chapter, Purdue University January 2024–May 2026

- Organized annual student conferences (2024, 2025, and 2026).

Mentor, Women in Science Program, Purdue University 2018–2019

Technical Skills

- **Languages:** MATLAB (advanced); C, C++, Python (foundational).
- **Libraries:** PyTorch (foundational).