Yutong Wang

Assistant Professor
Computer Science Department
Illinois Institute of Technology
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Research Interests

Uniquely multiclass phenomena • Theory of overparametrized learning • AI & ML for science • Uncertainty estimation • Privacy-preserving machine learning.

Professional Experience

Assistant Professor Aug 2024 - Present
Illinois Institute of Technology

Eric and Wendy Schmidt AI in Science Postdoctoral Fellow Jan 2023 - Jul 2024
University of Michigan
Advisors: Qing Qu, Wei Hu

Postdoctoral Research Fellow Sep 2022 - Jan 2023
University of Michigan

Education

PhD, Electrical & Computer Engineering Sep 2016 - Aug 2022
University of Michigan, Ann Arbor
Thesis: *Classification via Multiple Hyperplanes: Loss functions, Overparametrization, and Interpolation.* [Link]
Advisor: Clayton Scott

MA, Mathematics Sep 2014 - Jun 2016
University of California, Davis

BSE, Electrical Engineering (Minor in Mathematics) Sep 2010 - Apr 2014
University of Michigan, Ann Arbor

Publications

* denotes equal contribution.

[1] Han Bao, Amirreza Eshraghi, and **Wang, Yutong**. "Brenier Isotonic Regression". In: *Artificial Intelligence and Statistics* (2026).

[2] Hrithik Ravi, Clay Scott, Daniel Soudry, and **Wang, Yutong**. "The implicit bias of gradient descent on separable multiclass data". In: *Advances in Neural Information Processing Systems* 37 (2024), pp. 81324–81359.

[3] Jiyi Chen*, Pengyu Li*, **Yutong Wang**, Pei-Cheng Ku, and Qing Qu. "Sim2Real in reconstructive spectroscopy: Deep learning with augmented device-informed data simulation". In: *APL Machine Learning* 2.3 (Aug. 2024), p. 036106.

[4] **Yutong Wang** and Clayton Scott. "Unified Binary and Multiclass Margin-Based Classification". In: *Journal of Machine Learning Research* 25.143 (2024). [Link], pp. 1–51.

[5] Pengyu Li*, Xiao Li*, **Yutong Wang**, and Qing Qu. "Neural Collapse in Multi-label Learning with Pick-all-label Loss". In: *International Conference on Machine Learning*. [Link]. 2024.

[6] **Yutong Wang**, Rishi Sonthalia, and Wei Hu. "Near-Interpolators: Rapid Norm Growth and the Trade-Off between Interpolation and Generalization". In: *Artificial Intelligence and Statistics*. [Link]. 2024.

[7] Zhiwei Xu, **Yutong Wang**, Spencer Frei, Gal Vardi, and Wei Hu. "Benign Overfitting and Grokking in ReLU Networks for XOR Cluster Data". In: *International Conference on Learning Representations*. [Link]. 2024.

[8] **Yutong Wang** and Clayton Scott. "On Classification-Calibration of Gamma-Phi Losses". In: *Conference on Learning Theory*. [Link]. 2023.

[9] **Yutong Wang** and Clayton Scott. "Consistent Interpolating Ensembles via the Manifold-Hilbert Kernel". In: *Neural Information Processing Systems*. [Link]. 2022.

[10] Jianxin Zhang, **Yutong Wang**, and Clayton Scott. "Learning from Label Proportions by Learning with Label Noise". In: *Neural Information Processing Systems*. [Link]. 2022.

[11] **Yutong Wang** and Clayton Scott. "VC dimension of partially quantized neural networks in the overparametrized regime". In: *International Conference on Learning Representations*. [Link]. 2022.

[12] **Yutong Wang** and Clayton Scott. "An exact solver for the Weston-Watkins SVM subproblem". In: *International Conference on Machine Learning*. [Link]. 2021.

[13] **Yutong Wang** and Clayton Scott. "Weston-Watkins Hinge Loss and Ordered Partitions". In: *Neural Information Processing Systems*. [Link]. 2020.

[14] Tasha Thong, **Yutong Wang**, Michael Brooks, Christopher Lee, Clayton Scott, Laura Balzano, Max Wicha, and Justin Colacino. "Hybrid stem cell states: insights into the relationship between mammary development and breast cancer using single-cell transcriptomics". In: *Frontiers in Cell and Developmental Biology* 8 (2020). [Link], p. 288.

Grants

- **NSF CISE CRII, Award # 2451714** 2025
  CRII: RI: Uncertainty Estimation and Robustness in Hierarchical Classification,
  Budget: $172,913, Period Covered: 06/15/2025 - 05/31/2027
  PI: **Yutong Wang**

Presentations

Reinventing the Foundations of Multiclass Classification
Illinois Institute of Techonology, Machine Learning Student Club (April 2025)
The Institute of Statistical Mathematics, Tokyo (May 2025)

Benign Overfitting and Grokking in ReLU Networks for XOR Cluster Data
The Interplay between Learning, Optimization, and Statistics, 2023 INFORMS Annual Meeting.
Columbia University, John Wright lab group (Sept 2023)

Consistent Interpolating Ensembles
Workshop on the Theory of Overparameterized Machine Learning (TOPML 2022). [Link]
AI seminars at Boston University (Mar 2022).
UCSD, Misha Belkin lab group (Jan 2022).

Weston-Watkins Hinge Loss and Ordered Partitions
RIKEN seminar on Learning theory of loss functions (Nov 2021)
MCAIM Graduate Seminar, University of Michigan (Oct 2020)

Teaching

Instructor Fall 2024, Fall 20.25, Spring 2026
CS 577 Deep Learning

Graduate student instructor Winter 2021
University of Michigan, Ann Arbor, EECS 598 Statistical Learning Theory
Received ECE GSI Honorable Mention for my teaching efforts.

Teaching assistant Winter 20.25 - Spring 2016
University of California, Davis
Courses taught: MAT 21C Calculus: Partial Derivatives and Series, Winter 20.25, Fall 20.25, Winter 2016, and Winter 2016. MAT 21D Vector Analysis, Fall 2014, and Spring 2016.

Services

Doctoral Dissertation Committee
Yuzhang Shang (Spring 2025) • Binghui Zhang (Fall 2025) • Bin Duan (Fall 2024)

Doctoral Comprehensive Exam
Arman Behnam (Fall 2025) • Bin Xie (Fall 2025) • Xiongxiao Xu (Fall 2025) • Amirreza Eshraghi (Spring 2025)

Masters Thesis Committee
Sukhmani Sandhu (Summer 2025) • Gowtham Baskar (Spring 2025) • Sayedeh Leila Noorbakhsh (Spring 2025)

Organizer
"Understanding the Mechanisms of Deep Learning and Generative Modeling" workshop as part of the Winter/Spring 20.25 IDEAL Special Program on Deep Learning and Optimization.

Reviewer (conferences)
Conference on Learning Theory (COLT 2023), Neural Information Processing Systems (NeurIPS 2025,2023), International Conference on Learning Representations (ICLR 2026, 2023), International Conference on Machine Learning (ICML 2020), Artificial Intelligence and Statistics (AISTATS 2026)

Reviewer (journals)

Proceedings of the National Academy of Sciences (PNAS) of the United States of America, IEEE Transactions on Signal Processing, Journal of Machine Learning Research (JMLR)