Yutong Wang

yutongw@umich.edu
Electrical Engineering and Computer Science
University of Michigan
1301 Beal Avenue
Ann Arbor, MI, USA, 48109-2122

Research Interest

Machine learning theory, including theory of overparametrized learning, models that interpolate perfectly or nearly, and phenomena in multiclass learning. Applied machine learning to scientific domains, including applications to reconstructive spectroscopy and genomic analysis.

Professional Experience

Eric and Wendy Schmidt AI in Science Postdoctoral Fellow Jan 2023 - Present
University of Michigan, Ann Arbor
Postdoctoral Research Fellow Sep 2022 - Jan 2023
University of Michigan, Ann Arbor

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: Prof. 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

Preprint

[1] Pengyu Li, **Yutong Wang**, Xiao Li, and Qing Qu. *A Geometric Analysis of Multi-label Learning via Neural Collapse*. Under review. 2023.

Publications

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

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

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

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

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

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

[8] 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), p. 288.

Presentations

Closed-form Solutions of Learning Dynamics for Two-layer Nets for Collapsed Orthogonal Data
Third Workshop on Seeking Low-Dimensionality in Deep Neural Networks (SLowDNN). [Link]

Consistent Interpolating Ensembles
Workshop on the Theory of Overparameterized Machine Learning (TOPML 2022). [Link]

Domain adaptation for spatial and dissociated gene expression data
Learning Meaningful Representations of Life (LMRL) Workshop at NeurIPS. [Link]

Awards and Honors

NeurIPS 2022 Scholar Award

NIH-sponsored travel award 2019
For NeurIPS 2019 Conference workshop, "Learning Meaningful Representations of Life"

The Rollin M. Gerstacker Foundation Fellowship 2016

Dean's List 7 times
University Honors 4 times

Teaching Experience

Group leader Summer 2023
Midwest Research Experience for Graduates [link]
Advised four PhD students early in their programs on machine learning research over the course of two weeks.

Group leader assistant Summer 2022
Michigan Research Experience for Graduates [link]
Advised five PhD students early in their programs on machine learning research over the course of two weeks.

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

Guest lecturer Fall 2021
University of Michigan, Ann Arbor, SW 508 Essentials of Social Welfare Policy
Lecture topic: Fairness in machine learning and its impact on social policy. Course instructor: Rita Xiaochen Hu.

Teaching assistant Winter 2015 - Spring 2016
University of California, Davis
Courses taught: MAT 21C Calculus: Partial Derivatives and Series, Winter 2015, Fall 2015, Winter 2016, and Winter 2016. MAT 21D Vector Analysis, Fall 2014, and Spring 2016.

Professional Services

Reviewer (conferences)
Conference on Learning Theory (COLT) 2023
Neural Information Processing Systems (NeurIPS) 2023
International Conference on Learning Representations (ICLR) 2023 Workshop on Domain Generalization
International Conference on Machine Learning (ICML) 2020

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)

Group leader
NeurIPS 2022 High School Outreach Program at New Orleans. link

Judge
Michigan Student Symposium for Interdisciplinary Statistical Sciences (MSSISS) 2023. link

References

Available upon request