Tian-Yi Zhou (she/her)

CONTACT
INFORMATION

306 Main Building, 765 Ferst Drive NW
Atlanta, GA 30318

tzhou306@gatech.edu
https://tianyizhougt.github.io/

RESEARCH
INTERESTS

Deep learning theory, statistical learning theory, approximation theory, anomaly detection, functional data analysis, computational social science

EDUCATION

Georgia Institute of Technology, Atlanta, GA
Ph.D. in Machine Learning   August 2020 - May 2025 (expected)

- H. Milton Stewart School of Industrial and Systems Engineering (ISyE)
- Advisor: Xiaoming Huo
- Minor in Operations Research

The University of Hong Kong, Hong Kong SAR   Sep 2016 - June 2020
B.Sc. in Statistics, First Class Honors

University of California, Los Angeles, Los Angeles, CA   Jan 2019 - June 2019
Exchange Student, Study Mathematics and Statistics

PUBLICATIONS

Classification of Unbounded Data Generated by Gaussian Mixture Models via Deep ReLU Networks. (2024)
Tian-Yi Zhou, Xiaoming Huo.
Journal of Machine Learning Research (JMLR) 25(190): 1–54, 2024.

- ARC(Algorithms & Randomness Center)-ACO(Algorithms, Combinatorics, and Optimization) Fellowship, Georgia Tech (2023)

Learning Ability of Interpolating Deep Convolutional Neural Network. (2024)
Tian-yi Zhou, Xiaoming Huo.
Applied and Computational Harmonic Analysis (ACHA) 68 (2024): 101582.

- Second Place, The 13th American Institute of Mathematical Sciences (AIMS) Student Paper Competition (2023)
- Selected to present at Association for Women in Mathematics (AWM) Research Symposium (2023) (1 out of 35 female PhD students selected nationwide)
- Runner-up, Alice and John Jarvis Ph.D. Student Paper Competition, Georgia Tech (2022)

Approximation and Non-parametric Estimation of Functions over High-dimensional Spheres via Deep ReLU Networks. (2023)
Namjoon Suh, **Tian-Yi Zhou**, Xiaoming Huo.
International Conference on Learning Representations (ICLR) 2023.

Gone with the Weed: Incidents of Adolescent Marijuana Use in the United States, 1976–2021. (2023)
Gu, Jiaxin, Xin Guo, Xiaoxi Liu, Yue Yuan, Yushu Zhu, Minheng Chen, **Tian-Yi Zhou**, Qiang Fu.
Annals of Epidemiology 88 (2023): 23-29.

Modified Poisson Regression Analysis of Grouped and Right-censored Counts. (2021)
Qiang Fu, **Tian-yi Zhou**, Xin Guo.
Journal of the Royal Statistical Society: Series A 184(4): 1347-1367.

PREPRINTS	**Optimal Classification-based Anomaly Detection by Neural Networks: Theory and Practice in Cybersecurity.** (2024+) **Tian-Yi Zhou***, Matthew Lau*, Jizhou Chen, Wenke Lee, Xiaoming Huo. Under review at Annals of Applied Statistics .
	Approximation of RKHS Functionals by Neural Networks. (2024+) **Tian-Yi Zhou**, Namjoon Suh, Guang Cheng, Xiaoming Huo. **Under revision** for **Journal of Machine Learning Research (JMLR)**.
	Drink like a Man? Modified Poisson Analysis of Adolescent Binge Drinking in the US, 1976–2022. (2024+) Jiaxin Gu, Minheng Chen, Xin Guo, Yushu Zhu, **Tian-Yi Zhou**, Yue Yuan, Qiang Fu. **Under revision** at **Social Science & Medicine**. (manuscript available upon request)

HONORS AND AWARDS	🏆 Margaret and Stephen Kendrick Research Fellowship, Georgia Tech (Awarded annually to one Ph.D. student for research in machine learning and analytics)	2023-2024
	PhD mentoring service award, Georgia Tech	2023-2024
	Selected to Present at Cornell Young Researchers Workshop	2023
	Selected to present at Association for Women in Mathematics (AWM) Research Symposium	2023
	🏆 Second Place in Student Paper Competition, The 13th American Institute of Mathematical Science (AIMS) Conference	2023
	Selected Participant, FutureBAProf Workshop, Tippie College of Business, University of Iowa	2023
	🏆 ARC-ACO Fellowship, Georgia Tech (Institute-wide scholarship to support research in high-impact cross-disciplinary data science)	2023
	🏆 Runner-up, Alice and John Jarvis Ph.D. Student Paper Competition, Georgia Tech	2022
	Stewart Fellowship, Georgia Tech	2020-2021
	Overseas Research Fellowship, Columbia University (Supported by: Faculty of Science, The University of Hong Kong)	2019
	Wong Shek Yung Student Enrichment Award, The University of Hong Kong	2019
	Dean's Honors List, The University of Hong Kong	2016-2017, 2017-2018
	Dean's Honors List, University of California, Los Angeles	Spring 2019

TRAVEL AWARDS	Travel Award for attending "Statistics in the Age of AI" conference	2024
	SIAM Travel Award (Special W. Randolph Fund Recipient)	2024
	The 13th AIMS Conference Travel Award (Supported by NSF)	2023
	Graduate Student Travel Award, College of Engineering and Student Government Association, Georgia Tech	2023

RECENT INVITED TALKS	**Seminar Talk at the Department of Mathematics** University of Hong Kong, Hong Kong SAR Talk: "Approximation of RKHS Functionals by Neural Networks"	December 2024 (scheduled)
	Joint Meeting of the New Zealand, Australian and American Mathematical Societies Auckland, New Zealand Talk: "Optimal Unsupervised Anomaly Detection by Neural Networks: Theory and Practice in Cybersecurity"	December 2024 (scheduled)

Seminar Talk at the Department of Mathematics
Universität Bayreuth, Bayreuth, Germany   November 2024 (scheduled)
Talk: "Optimal Unsupervised Anomaly Detection by Neural Networks: Theory
and Practice in Cybersecurity"

SIAM Seminar
Georgia Institute of Technology   November 2024 (scheduled)
Talk: "Optimal Unsupervised Anomaly Detection by Neural Networks: Theory
and Practice in Cybersecurity"

INFORMS Annual Meeting 2024
Seattle, WA   October 2024 (scheduled)
Talk: "Classification of Unbounded Data generated by Gaussian Mixture Models
via Deep ReLU Networks"

ML@GT Student Conference
Georgia Institute of Technology   August 2024
Talk: "Optimal Unsupervised Anomaly Detection by Neural Networks: Theory
and Practice in Cybersecurity"

Statistics and Data Science Seminar
University of Sydney, Sydney, Australia   July 2024
Talk: "Optimal Unsupervised Anomaly Detection by Neural Networks: Theory
and Practice in Cybersecurity"

ACTION AI Institute Annual Review and Knowledge Expo (Lightening talk & Poster)
UC Santa Barbara, Santa Barbara, California   June 2024
Talk: "Optimal Unsupervised Anomaly Detection by Neural Networks: Theory
and Practice in Cybersecurity"

"Statistics in the Age of AI" conference (poster)
The George Washington University, Washington, DC   May 2024
Talk: "Classification of Unbounded Data generated by Gaussian Mixture Models
via Deep ReLU Networks"

Analysis and Data Science Seminar
SUNY Albany, Albany, NY   April 2024
Talk: "Classification of Unbounded Data generated by Gaussian Mixture Models
via Deep ReLU Networks"

Southeast Applied and Computational Mathematics Workshop
Georgia Institute of Technology   April 2024
Talk: "Approximation of RKHS Functionals by Neural Networks"

SIAM Conference on Parallel Processing for Scientific Computing (PP24)
Baltimore, MD   March 2024
Talk: "Classification of Unbounded Data generated by Gaussian Mixture Models
via Deep ReLU Networks"

SIAM Seminar
Georgia Institute of Technology   October 2023
Talk: "Classification of Unbounded Data generated by Gaussian Mixture Models
via Deep ReLU Networks"

Cornell Young Researchers Workshop 2023 (Poster)
Cornell University, Ithaca, NY   October 2023
Poster: "Learning Ability of Interpolating Deep Convolutional Neural Network"

The 2023 Association for Women in Mathematics (AWM) Research Symposium
Clark Atlanta University, Atlanta, GA   September 2023
Talk: "Learning Ability of Interpolating Deep Convolutional Neural Network"

Algorithms & Randomness Center (ARC) Colloquium
Georgia Institute of Technology   September 2023
Talk: "Classification of Unbounded Data by Gaussian Mixture Models
via Deep ReLU Networks"

10th International Congress on Industrial and Applied Mathematics (ICIAM 2023)
Waseda University, Tokyo, Japan   August 2023
Talk: "Learning Ability of Interpolating Deep Convolutional Neural Network"

The 13th American Institute of Mathematical Science (AIMS) Conference
Wilmington, NC   June 2023
Talk: "Learning Ability of Interpolating Deep Convolutional Neural Network"

TEACHING EXPERIENCE	**Graduate Teaching Assistant**, ISyE, Georgia Tech *ISyE/CEE 3770 Statistics and Applications*	Fall 2020, Spring 2021

Graduate Teaching Assistant, ISyE, Georgia Tech   Fall 2020, Spring 2021
ISyE/CEE 3770 Statistics and Applications

Undergraduate Teaching Assistant, Department of Statistics and Actuarial Science,
The University of Hong Kong   Spring 2020
STAT 2601 Statistics and Probability I

"Survival Cantonese" Tutor, Center of Development and Resources for Students,
The University of Hong Kong   2016-2017
Conduct 1-to-1 Cantonese tutoring sessions to international students

PROFESSIONAL SERVICE

Reviewer:
Conferences: NeurIPS, ICLR, AISTATS
Journals: Journal of the American Statistical Association (JASA), Bernoulli, Journal of Complexity, Journal of Approximation Theory

Institutional Service:
Co-organisor, ISyE Student Seminar, Georgia Tech   2024-2025

Co-organisor, SIAM Seminar, Georgia Tech   2023

Secretary, SIAM Student Chapter, Georgia Tech   2023, 2024

Reviewer, President's Undergraduate Research Awards, Georgia Tech 2023

Co-organisor, "Machine Learning + Dynamics" Seminar, School of Mathematics, Georgia Tech 2023

Ph.D. Mentor, ISyE Ph.D. peer mentoring program, Georgia Tech   2022-2023, 2023-2024

Outreach:
Volunteer, Georgia Science Olympiad State Tournament, Atlanta, GA 2023

Exam Writer and Grader, AP Statistics competition, Georgia Tech   2023

PERSONAL INFORMATION
- Pronouns: she/her
- Citizenship: Hong Kong SAR