

Tian-Yi Zhou (she/her)

CONTACT INFORMATION	Main 317, 765 Ferst Drive 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	<p>Georgia Institute of Technology, Atlanta, GA Ph.D. in Machine Learning, GPA: 4.00/4.00 August 2020 - May 2025 (expected)</p> <ul style="list-style-type: none">• H. Milton Stewart School of Industrial and Systems Engineering (ISyE)• Advisor: Xiaoming Huo• Minor in Operations Research <p>The University of Hong Kong, Hong Kong SAR Sep 2016 - June 2020 B.Sc. in Statistics, First Class Honors</p> <ul style="list-style-type: none">• Department of Statistics and Actuarial Science <p>University of California, Los Angeles, Los Angeles, CA Jan 2019 - June 2019 Exchange Student, Major in Statistics</p>	
PUBLICATIONS	<p>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.</p> <ul style="list-style-type: none">• ARC(Algorithms & Randomness Center)-ACO(Algorithms, Combinatorics, and Optimization) Fellowship, Georgia Tech (2023) <p>Learning Ability of Interpolating Deep Convolutional Neural Network. (2024) Tian-yi Zhou, Xiaoming Huo. Applied and Computational Harmonic Analysis (ACHA) 68 (2024): 101582.</p> <ul style="list-style-type: none">• 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) <p>Approximation and nonparametric estimation of functions over high-dimensional spheres via deep ReLU networks. (2023) Namjoon Suh, Tian-Yi Zhou, Xiaoming Huo. ICLR 2023.</p> <p>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.</p> <p>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.</p>	

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.
Submitted to a Journal.

Approximation of RKHS Functionals by Neural Networks. (2024+)

Tian-Yi Zhou, Namjoon Suh, Guang Cheng, Xiaoming Huo.
Under revision at **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 2023-2024
(Awarded annually to one Ph.D. student for research in machine learning and analytics)
- 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 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 December 2024 (scheduled)
Talk: "Classification of Unbounded Data by Gaussian Mixture Models via Deep ReLU Networks"
- Joint Meeting of the New Zealand, Australian and American Mathematical Societies**
Auckland, New Zealand December 2024 (scheduled)
Talk: "Optimal Unsupervised Anomaly Detection by Neural Networks: Theory and Practice in Cybersecurity"

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 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 Poster: "Learning Ability of Interpolating Deep Convolutional Neural Network"	October 2023
	The 2023 Association for Women in Mathematics (AWM) Research Symposium Clark Atlanta University, Atlanta, GA Talk: "Learning Ability of Interpolating Deep Convolutional Neural Network"	September 2023
	Algorithms & Randomness Center (ARC) Colloquium Georgia Institute of Technology Talk: "Classification of Unbounded Data by Gaussian Mixture Models via Deep ReLU Networks"	September 2023
	10th International Congress on Industrial and Applied Mathematics (ICIAM 2023) Waseda University, Tokyo, Japan Talk: "Learning Ability of Interpolating Deep Convolutional Neural Network"	August 2023
	The 13th American Institute of Mathematical Science (AIMS) Conference Wilmington, NC Talk: "Learning Ability of Interpolating Deep Convolutional Neural Network"	June 2023
TEACHING EXPERIENCE	Graduate Teaching Assistant , ISyE, Georgia Tech <i>ISyE/CEE 3770 Statistics and Applications</i>	Fall 2020, Spring 2021
	Undergraduate Teaching Assistant , Department of Statistics and Actuarial Science, The University of Hong Kong <i>STAT 2601 Statistics and Probability I</i>	Spring 2020
	"Survival Cantonese" Tutor , Center of Development and Resources for Students, The University of Hong Kong <i>Conduct 1-to-1 Cantonese tutoring sessions for non-local students</i>	2016-2017
PROFESSIONAL SERVICE	Reviewer: Conferences: NeurIPS, ICLR, AISTATS Journals: Bernoulli, Journal of Complexity, Journal of Approximation Theory	
	Institutional Service: Co-organisator, ISyE Student Seminar, Georgia Tech	2024-2025
	Co-organisator, SIAM Seminar, Georgia Tech	2023
	Secretary, SIAM Student Chapter, Georgia Tech	2023, 2024
	Reviewer, President's Undergraduate Research Awards, Georgia Tech	2023
	Co-organisator, "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	<ul style="list-style-type: none"> • Pronouns: she/her • Citizenship: Hong Kong SAR 	