Tianyu Zhang

Department of Statistics and Applied Probability   Phone: (+1) 206-488-2242
University of California, Santa Barbara   Email: tyz@ucsb.edu
Santa Barbara, CA 93106

Employment

Assistant Professor   7/2025-present
Department of Statistics and Applied Probability,
            University of California, Santa Barbara (UCSB)

Post Doctoral Researcher
Department of Statistics & Data Science, Carnegie Mellon University   9/2022-6/2025
            Hosting Faculty   *Jing Lei and Kathryn Roeder*

Research Assistant
Department of Biostatistics, University of Washington   3/2018-8/2022

Statistical Consultant
FOXO Technologies Inc.   9/2021-8/2022

Research Scientist Intern
Modeling and Optimization team, Amazon   6-9/2020 & 6-9/2021

Education

Ph.D. Biostatistics, University of Washington   9/2017-8/2022
            Dissertation Title   *Modern Sieve Estimators for Nonparametric
                                    Problems: Streaming Data and High-dimensional Data.*
            Committee Members *Noah Simon (Chair), Alex Luedtke
                                    Marco Carone, Rekha Thomas*
B.S. Life Science & Mathematics (Double Major), Peking University   9/2013-7/2017

Research Publication (* indicates co-first author)

Methodology Research

1. **Tianyu Zhang**, Hao Lee, and Jing Lei. "Winners with Confidence: Discrete Argmin
   Inference with an Application to Model Selection" arXiv:2408.02060 (2025). (under
   revision, second round = first round = major revision at *Journal of the Royal Statistical
   Society Series B*)

2. **Tianyu Zhang**, Ergan Shang, and Kathryn Roeder. "Genetic Convergence Analysis of CRISPR Perturbations Deciphers Gene Functional Similarity" bioRxiv preprint (2025) doi: https://doi.org/10.1101/2025.11.13.688060 (submitted)

3. Kenta Takatsu, **Tianyu Zhang**, and Arun Kumar Kuchibhotla. "From isotonic to Lipschitz regression: a new interpolative perspective on shape-restricted estimation" arXiv:2307.05732 (2025). (second round review, first round = major revision at *the Annals of Statistics*)

4. **Tianyu Zhang** and Jing Lei. "Online Estimation with Rolling Validation: Adaptive Nonparametric Estimation with Streaming Data." arXiv preprint arXiv:2310.12140 (2025). (accepted at *the Annals of Statistics*)

5. **Tianyu Zhang**, Jing Lei, and Kathryn Roeder. "Adaptive Projected Two-Sample Comparisons for Single-Cell Gene Expression Data" arXiv preprint arXiv:2403.05679 (2025).

6. **Tianyu Zhang**, Geyu Zhou, Lambertus Klei, Peng Liu, Alexandra Chouldechova, Hongyu Zhao, Kathryn Roeder, Max G'Sell, and Bernie Devlin. "Evaluating and improving health equity and fairness of polygenic scores." *Human Genetics and Genomics Advances* 5, no. 2 (2024).

7. **Tianyu Zhang**, Noah Simon "Regression in Tensor Product Spaces by the Method of Sieves," *Electronic Journal of Statistics*, 17(2), 3660-3727, (2023)

8. Yunhua Xiang*, **Tianyu Zhang***, Xu Wang, Ali Shojaie, and Noah Simon. "On the Optimality of Nuclear-norm-based Matrix Completion for Problems with Smooth Non-linear Structure." *Journal of Machine Learning Research* 24, no. 228 (2023): 1-38.

9. **Tianyu Zhang** and Noah Simon. "An Online Projection Estimator for Nonparametric Regression in Reproducing Kernel Hilbert Spaces." *Statistica Sinica* 33.1 (2023): 127.

10. **Tianyu Zhang** and Noah Simon. "A Sieve Stochastic Gradient Descent Estimator for Online Nonparametric Regression in Sobolev Ellipsoids." *The Annals of Statistics* 50, no. 5 (2022): 2848-2871.

Interdisciplinary and Collaborative Research

1. **Tianyu Zhang***, Chris A Gentry*, Nicole M Kuderer, Gary H Lyman, Bernard Ng, Despina Michailidou. "Association of Selective Serotonin and Serotonin-Norepinephrine Reuptake Inhibitor Use with Incidence of Cardiovascular Events in Veterans with Giant Cell Arteritis and Polymyalgia Rheumatica in the United States." *Frontiers in Immunology* 16: 1509941(2025)

2. Conghao Zhou, Hao-Yi Wu, Andrés N. Salcedo, Sebastian Grandis, Tesla Jeltema, Alexie Leauthaud, Matteo Costanzi, Tomomi Sunayama, David H. Weinberg, **Tianyu Zhang**,

Eduardo Rozo, Chun-Hao To, Sebastian Bocquet, Tamas Varga, Matthew Kwiecien. "Forecasting the constraints on optical selection bias and projection effects of galaxy cluster lensing with multiwavelength data." *Physical Review D* 110, no. 10 (2024): 103508.

3. Yihang Shen, Lingge Yu, Yutong Qiu, **Tianyu Zhang** and Carl Kingsford. "Improving Hi-C contact matrices using genome graphs." *RECOMB* 2024

4. Despina Michailidou, **Tianyu Zhang***, Nicole M. Kuderer, Gary H. Lyman, Andreas P. Diamantopoulos, Pavlos Stamatis, and Bernard Ng. "Predictive Models for Thromboembolic Events in Giant Cell Arteritis: A US Veterans Health Administration Population-based Study." *Frontiers in Immunology* 13 (2022): 997347.

5. Despina Michailidou, **Tianyu Zhang**, Pavlos Stamatis, and Bernard Ng. "Risk of venous and arterial thromboembolism in patients with giant cell arteritis and/or polymyalgia rheumatica: A Veterans Health Administration population‑based study in the United States." *Journal of Internal Medicine* 291, no. 5 (2022): 665-675.

6. Yiming Wang, Weikaixin Kong, Liang Wang, **Tianyu Zhang**, Boyue Huang, Jia Meng, Baoxue Yang, Zhengwei Xie, and Hong Zhou. "Multiple-purpose Connectivity Map Analysis Reveals the Benefits of Esculetin to Hyperuricemia and Renal Fibrosis." *International Journal of Molecular Sciences* 21, no. 20 (2020): 7695.

7. Zhengwei Xie*****, **Tianyu Zhang***, and Qi Ouyang. "Genome-scale Fluxes Predicted under the Guidance of Enzyme Abundance using a Novel Hyper-cube Shrink Algorithm." *Bioinformatics* 34, no. 3 (2018): 502-510.

Teaching

Instructor

Department of Statistics and Applied Probability, UCSB
    PSTAT 100 Data Science Concepts and Analysis   Fall 2025

Guest Lecturer

Computational Biology Department, Carnegie Mellon University   Fall 2024
    02704 Introduction to Statistical Genetics, Instructor: *Martin Zhang*

Teaching Assistant

Department of Biostatistics, University of Washington
    BIOST 514/517 Biostatistics, Instructor: *Ken Rice*   Fall 2020
    BIOST 546 Machine Learning for Biomedical and Public Health Big Data   Winter 2019
                Instructor: *Daniela Witten*

School of Life Sciences, Peking University
    Calculus I, Instructor: *Jiazhong Yang*   Summer 2016 & 2017

Honors and Recognition

Featured in the *HGG Advances* monthly author interview series   2024
Best Student Oral Presentation, *WNAR*   2022
POSCO Scholarship, Peking University   2015-2016
Suzhou Industrial Park Scholarship, Peking University   2014-2015

Professional Activities

Peer Reviewer: Annals of Statistics, Bernoulli, Biometrika, Biostatistics, Cell Press, Computational Statistics, Genome Research, Journal of Computational and Applied Mathematics, Journal of Machine Learning Research (x4), Journal of the Royal Statistical Society Series B (x2), PLOS Genetics

Open-source software: Sieve(R-CRAN), HMC(R-CRAN), Joint-Lassosum(GitHub)

Statistical Learning Applied to Biostatistics (SLAB) Lab Seminar Organizer 9/2020-9/2021
Department of Biostatistics, University of Washington

Peer Mentor   9/2019-9/2020
Department of Biostatistics, University of Washington

Selected Presentations

1. Seminar, University of California, Santa Barbara, Department of Statistics and Applied Probability, 2025. Title: *Winners with Confidence: Argmin Inference and Algorithmic Stability.*

2. EcoStat 2025, Waseda University, Japan. Title: *Adaptive Projected Multiple Sample Comparison.*

3. Seminar, Columbia University, Department of Biostatistics, 2025. Title: *Adaptive and Scalable Nonparametric Estimation via Stochastic Optimization.*

4. Seminar, University of North Carolina at Chapel Hill, Department of Biostatistics, 2025. Title: *Adaptive and Scalable Nonparametric Estimation via Stochastic Optimization.*

5. Seminar, University of California, Santa Barbara, Department of Statistics and Applied Probability, 2025. Title: *Adaptive and Scalable Nonparametric Estimation via Stochastic Optimization.*

6. Seminar, University of Texas at Austin, Department of Statistics and Data Sciences, 2025. Title: *Adaptive and Scalable Nonparametric Estimation via Stochastic Optimization.*

7. Seminar, University of Texas at Dallas, Department of Mathematical Sciences, 2024. Title: *Adaptive and Scalable Nonparametric Estimation via Stochastic Optimization.*

8. Seminar, University of Michigan, Department of Statistics, 2024. Title: *Adaptive and Scalable Nonparametric Estimation via Stochastic Optimization.*

9. Seminar, Iowa State University, Department of Statistics, 2024. Title: *Adaptive and Scalable Nonparametric Estimation via Stochastic Optimization.*

10. Invited seminar presentation at the Heart Institute (InCor), University of São Paulo Medical School, Brazil (remote), 2024. Title: *Evaluating and Improving Health Equity and Fairness of Polygenic Scores*

11. Invited talk at the *American Society of Human Genetics* monthly journal club, 2024. Title: *Evaluating and Improving Health Equity and Fairness of Polygenic Scores*

12. Joint Statistical Meeting 2024. Topic-Contributed Sessions. Title: *Online Estimation with Rolling Validation: Adaptive Nonparametric Estimation with Streaming Data.*

13. American Statistical Association STATGEN 2024. Title: *Debiased Projected Two-Sample Comparisons for Single-Cell Expression Data.*

14. WNAR 2022. Title: *Regression in Tensor Product Spaces by the Method of Sieves*

Skills

Computation: R, SQL, Python, Shell script, C++, MATLAB.
Language: Chinese (native); English (proficient); Japanese (beginner).