Yiming Xu

Department of Statistics and Actuarial Science
Faculty of Mathematics
University of Waterloo

Date of Birth: 10/23/1995
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EDUCATION

08/2017-05/2022 **Department of Mathematics, University of Utah**
Ph.D., Mathematics
Advisors: Tom Alberts, Akil Narayan
Dissertation: *A bandit-learning approach to multifidelity approximation*

09/2012-06/2016 **Department of Mathematics, Sichuan University**
B.S., Mathematics

EMPLOYMENT

09/2023–Now **Department of Statistics and Actuarial Science, University of Waterloo**
Postdoctoral Fellow
Mentor: Aukosh Jagannath

07/2022–07/2023 **Wells Fargo Bank**
2022 QAP Fellow
Manager: Bernhard Hientzsch

RESEARCH INTERESTS

My major interest concerns the mathematics of data, including network data analysis, randomized numerical approximation, statistical-computational gaps, and sparse recovery. I am also interested in multifidelity methods, including budget-constrained variance reduction, distribution estimation, and scientific machine learning.

AWARDS

2021 T. Benny and Gail T. Rushing Fellowship, Department of Mathematics, University of Utah

2020 Outstanding Graduate Student, Department of Mathematics, University of Utah

2015 National Scholarship, Sichuan University

PUBLICATIONS

∗ denotes equal contribution. † denotes student authorship.

Preprints

2023 B. Adcock, B. Hientzsch, A. Narayan, Y. Xu, "Hybrid least-squares for noisy function approximation", *preprint* (finished but not yet submitted)

2023 R. Gheissari, A. Jagannath, Y. Xu, "Finding planted cliques using Markov chain Monte Carlo", *submitted*, arxiv: 2311.07540

2023 R. Han, Y. Xu, "A unified analysis of likelihood-based estimators in the Plackett–Luce model", *submitted to Ann. Stat.*, arxiv: 2306.02821

2023 R. Han, B. Kramer, D. Lee, A. Narayan, Y. Xu, "An approximate control variates approach to multifidelity distribution estimation", *submitted to SIAM/ASA J. Uncertain. Quantif.*, arXiv:2303.06422

2022 K. Craig, B. Osting, D. Wang, Y. Xu, "Wasserstein archetypal analysis", *submitted to Appl. Math. Optim.*, arXiv:2210.14298

2022 O.A. Malik*†, Y. Xu*†, N. Cheng*†, S. Becker, A. Doostan, A. Narayan, "Fast algorithms for monotone lower subsets of Kronecker least squares problems", *submitted to Adv. Comput. Math.*, arXiv:2209.05662

Peer-Reviewed Journals

2023 N. Cheng*†, O.A. Malik*†, Y. Xu*†, S. Becker, A. Doostan, A. Narayan, "Subsampling of parametric models with bi-fidelity boosting", *SIAM/ASA J. Uncertain. Quantif. (to appear)*, arXiv:2209.05705

2023 Y. Xu†, A. Narayan, "Randomized weakly admissible meshes", *J. Approx. Theory*, 105835. doi: 10.1016/j.jat.2022.105835

2023 Y. Xu†, A. Narayan, "Budget-limited distribution learning in multifidelity problems", *Numer. Math.*, 153 (1), 171-212, doi: 10.1007/s00211-022-01337-5

2022 R. Han*, B. Osting, D. Wang, Y. Xu*, "Probabilistic methods for approximate archetypal analysis", *Inf. Inference*, 12 (1), 466–493. doi: 10.1016/j.acha.2021.06.006

2022 R. Han*, Y. Xu*, K. Chen, "A general pairwise comparison model for extremely sparse networks", *J. Amer. Statist. Assoc.*, 1–11, doi: 10.1080/01621459.2022.2053137

2022 Y. Xu†, V. Keshavarzzadeh, R.M. Kirby, A. Narayan, "A bandit-learning approach to multifidelity approximation", *SIAM J. Sci. Comput.*, 44 (1), A150–A175, doi: 10.1137/21M140831

2021 Y. Xu†, A. Narayan, H. Tran, C.G. Webster, "Analysis of the ratio of ℓ_1 and ℓ_2 norms in compressed sensing", *Appl. Comput. Harmon. Anal.*, 55, 486–511, doi: 10.1016/j.acha.2021.06.006

2021 B. Osting, D. Wang, Y. Xu, D. Zosso, "Consistency of archetypal analysis", *SIAM J. Math. Data Sci.*, 3 (1), 1–30, doi: 10.1137/20M1331792

Conference Proceedings

2023 S. Li*, M. Penwarden*, Y. Xu, C. Tillinghast, A. Narayan, R.M. Kirby, S. Zhe, "Meta learning of interface conditions for multi-domain physics-informed neural networks", *ICML*, PMLR 820: 19855-19881

2022 Z. Wang*, Y. Xu*, C. Tillinghast, S. Li, A. Narayan, S. Zhe, "Nonparametric embeddings of sparse high-order interaction events", *ICML*, 23237–23253, PMLR 162:23237-23253

COURSES TAUGHT

Spring 2024	Stats 440–Computational Statistics, University of Waterloo
Spring 2020	Math 1070–Introduction to Statistical Inference, University of Utah
Fall 2019	Math 1070–Introduction to Statistical Inference, University of Utah
Summer 2019	Math 1220–Calculus II, University of Utah
Spring 2019	Math 1100–Business Calculus, University of Utah
Fall 2018	Math 1100–Business Calculus, University of Utah

SERVICES

10/2023 Waterloo Student Conference in Statistics, Actuarial Science and Finance, University of Waterloo
Volunteered as a session judge for a statistics session.

10/2021 Undergraduate Directed Reading Program, University of Utah
Mentored Jonathan Dahrken on an independent reading course on compressed sensing, including holding weekly meetings to discuss assigned exercises and readings.

INVITED TALKS

10/2021 6th Annual Meeting of SIAM Central States Section mini-symposium, University of Kansas

09/2021 SIAM SEAS mini-symposium on Surrogate modeling for high-dimensional problems and applications, Auburn University

08/2021 Optimization & Machine Learning Seminar, The Chinese University of Hong Kong, Shenzhen

10/2020 Applied Math/PDE Seminar, Brigham Young University