Tong Xu

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EDUCATION

Northwestern University, Evanston, IL — Sept. 2022 – June 2026 (expected)
Ph.D. in Industrial Engineering & Management Sciences, GPA: 3.94/4.00
Advisor: Simge Küçükyavuz
Arthur P. Hurter Outstanding First-Year Graduate Student Award, 2023

University of Michigan, Ann Arbor, MI — Sept. 2020 – Dec. 2021
M.S. in Quantitative Finance and Risk Management, GPA: 3.97/4.00

East China Normal University, Shanghai, China — Sept. 2016 – June 2020
B.Econ. in Financial Engineering, GPA: 3.71/4.00
Outstanding Graduates of Shanghai, 2020

RESEARCH INTERESTS

Mixed integer optimization, Causal inference, High-dimensional statistics

PUBLICATIONS AND PREPRINTS

(* These authors contributed equally to this work.)

1. An Asymptotically Optimal Coordinate Descent Algorithm for Learning Bayesian Networks from Gaussian Models.
   Tong Xu, Simge Küçükyavuz, Ali Shojaie, Armeen Taeb
   Journal of Machine Learning Research (JMLR), Minor Revision [link]

2. Integer Programming for Learning Directed Acyclic Graphs from Non-identifiable Linear Models.
   Tong Xu*, Armeen Taeb*, Simge Küçükyavuz, Ali Shojaie
   Biometrika, 2025[link]

3. Efficient Inference of Spatially-varying Gaussian Markov Random Fields with Applications in Gene Regulatory Networks.
   Visweswaran Ravikumar*, **Tong Xu***, Wajd N Al-Holou, Salar Fattahi, Arvind Rao
   IEEE/ACM Transactions on Computational Biology and Bioinformatics, 2023 [link]

WORKING PAPERS

1. Asymptotically Optimal Learning of Bayesian Networks under Unknown Interventions from Gaussian Models.
   Tong Xu, Armeen Taeb, Simge Küçükyavuz, Ali Shojaie
   Working paper, 2025

2. Best Coordinate Descent: A Consistent Algorithm for ℓ_0-Penalized Sparse Regression.
   Tong Xu, Xiaozhu Zhang, Simge Küçükyavuz, Ali Shojaie, Armeen Taeb
   Working paper, 2025

3. Adaptive Linear Cuts for the Convex Hull of Low-Rank Quadratic Programming with Indicators.
   Tong Xu, Salar Fattahi, Andrés Gómez, Simge Küçükyavuz
   Working paper, 2025

EXPERIENCE

Uber Technologies, Inc., Sunnyvale, California — June 2025 - Sept. 2025
PhD Software Engineering Intern

- Researched and implemented deep learning models for preorder delivery time estimation

Essence Securities Co., Ltd., Shanghai, China — July 2019 - Sept. 2019
Quantitative Research Intern

- Implemented a stock-picking alpha evaluation framework in Python, calculating information ratios, factor returns, and stability, and verifying the monotonicity of stock returns in the range of factor values

Kafang Technology, Shanghai, China — Feb. 2019 - April 2019
Quantitative Research Intern

- Implemented alphas using minute-level A-share market data by leveraging insights from financial engineering reports and academic papers

INVITED PRESENTATIONS

1. **INFORMS Annual Meeting**, Atlanta, GA — Oct. 2025
   "Asymptotically Optimal Learning of Bayesian Networks under Unknown Interventions from Gaussian Models"
2. **International Conference on Continuous Optimization**, Los Angeles, CA — July 2025
   "Mixed-Integer Programming for Causal DIscovery"
3. **Midwest Optimization & Statistical Learning Conference**, Evanston, IL — May 2025
   "An Asymptotically Optimal Coordinate Descent Algorithm for Learning Bayesian Networks from Gaussian Models"
4. **INFORMS Annual Meeting**, Seattle, WA — Oct. 2024
   "Integer Programming for Learning Directed Acyclic Graphs from Non-identifiable Gaussian Models"
5. **Artificial Intelligence School for CS and OR Education (AI-SCORE)**, College Park, MD, — May 2024
6. **IDEAL Learning in Networks: Discovering Hidden Structures Workshop**, Evanston, IL, — April 2024
   "Integer Programming for Learning Directed Acyclic Graphs" (poster)

ACADEMIC SERVICE

Reviewer: NeurIPS, ICLR, ICML, AAAI, AISTATS

AWARDS

David Graham and Florence Graham Scholarship	2025
Richard L. Francis Scholarship	2024
Arthur P. Hurter Outstanding First-Year Graduate Student Award (Northwestern University)	2023
Outstanding Graduates of Shanghai	2020
National Encouragement Scholarship	2017 – 2018

SKILLS

Programming languages: Python, R, MATLAB, SQL, Go
Packages & Tools: Gurobi, Numpy, Pandas, Pytorch, Scikit-learn
Software & Others: MS Office, LaTeX

INTERESTS

Cycling, Freediving