Zikai Xiong

MIT Operations Research Center
77 Massachusetts Avenue
Cambridge, MA 02139
Email: zikai@mit.edu
Website: https://zikaixiong.github.io/

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA (expected) June 2025
Ph.D. in Operations Research
Advisor: Prof. Robert M. Freund

Fudan University, Shanghai, China May 2020
B.S. in Mathematics and Applied Mathematics

RESEARCH INTERESTS

Huge-scale linear programming, first-order methods for optimization, with applications in statistical learning, machine learning, deep learning, transportation and fairness.

PUBLICATIONS

Publications and working papers in optimization:

- **Zikai Xiong** and Robert Freund, "Geometric Condition Measures in First-Order Methods for Linear Programming"
- **Zikai Xiong** and Robert Freund, "Using Taylor-Approximated Gradients to Improve the Frank-Wolfe Method for Empirical Risk Minimization," submitted. https://zikaixiong.github.io/FWERM.pdf
- Dongdong Ge, Chengwenjian Wang, **Zikai Xiong**, and Yinyu Ye, "From an Interior Point to a Corner Point: Smart Crossover," submitted. https://arxiv.org/abs/2102.09420
- Dongdong Ge, Haoyue Wang, **Zikai Xiong**, and Yinyu Ye, "Interior-Point Methods Strike Back: Solving the Wasserstein Barycenter Problem." *NeurIPS 2019*, 6894-6905, 2019. https://proceedings.neurips.cc/paper/2019/hash/0937fb5864ed06ffb59ae5f9b5ed67a9-Abstract.html
- **Zikai Xiong**, Renjie Xu, Yanwei Xu, and Yimin Wei, "Low-Rank Traffic Matrix Completion with Marginal Information." *Journal of Computational and Applied Mathematics* 410(3):114219, 2022. https://doi.org/10.1016/j.cam.2022.114219

Other:

- Zhengqi Gao, Fan-Keng Sun, Mingran Yang, Sucheng Ren, **Zikai Xiong**, et al. "Learning from Multiple Annotator Noisy Labels via Sample-wise Label Fusion." *ECCV 2022*. https://arxiv.org/abs/2207.11327
- **Zikai Xiong**, Jiacheng Guo and Bo Jiang, "Effect of Hidden-City Ticketing in Revenue Management"

WORK EXPERIENCE

Research Assistant, Shanghai University of Finance and Economics (SUFE) 2018 – 2020
Research Institute for Interdisciplinary Sciences (RIIS)
Advisors: Professor Yinyu Ye (Stanford), Dr. Dongdong Ge (SUFE)

- Developed new crossover methods for linear programming (LP), now in a new commercial LP solver that won first place in Hans Mittelmann benchmark of barrier LP solvers. Paper submitted.

- Developed a matrix-based adaptive alternating interior-point method (MAAIPM) to solve the large-scale linear programming subproblems in Wasserstein barycenter problems. Paper published in *NeurIPS* 2019.
- Studied the effects of hidden-city ticketing practices on airline revenues.

PRESENTATIONS

- "Using Taylor-Approximated Gradients to Improve the Frank-Wolfe Method for Empirical Risk Minimization," ICCOPT, Bethlehem, 2022; and MIT Operations Research Center, Cambridge, 2022; and INFORMS Annual Meeting, Indianapolis, 2022
- "From an inner point to a corner point: Smart Crossover," INFORMS Annual Meeting, Indianapolis, 2022
- "Interior-Point Methods Strike Back: Solving the Wasserstein Barycenter Problem," INFORMS Annual Meeting, Seattle, 2019; and Shanghai University of Finance and Economics 2019

PROFESSIONAL SERVICE

Reviewer:

Journal: *SIAM Journal on Optimization (SIOPT)*

Conference: *ICML 2021/2022*; *NeurIPS 2022*

HONORS & AWARDS

First Place, MIT OR Center Common Experience Presentation Competition 2021

SIAM Travel Award 2021

Fudan Graduation Star 2020

The highest award of Fudan University for only 10 graduates every year

Outstanding Graduate of Shanghai City 2020

Fudan Outstanding Student Pacesetter Award 2019

The highest annual award of Fudan University for only 10 undergraduate students

National Scholarship 2018

The highest annual scholarship for top students (1%)

OTHER

Teaching Assistant:

Massachusetts Institute of Technology graduate courses:

- 15.081 Introduction to Mathematical Programming Fall 2022
- 15.077 Statistical Machine Learning and Data Science Summer 2022
- 15.071 The Analytics Edge Spring 2022

Shanghai University of Finance and Economics graduate courses:

- International Summer Courses (Stochastic Modeling; From Machine Learning to Decision-making: Bandit Learning and Reinforcement Learning; Stochastic Process and Financial Risk Analysis) Summer 2019

Programming languages: Julia, Python, MATLAB, R, C++

Hobbies: Hiking, Kayaking, Skiing