

# Zikai Xiong

MIT Operations Research Center

77 Massachusetts Avenue

Cambridge, MA 02139

Email: [zikai@mit.edu](mailto: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, transportation and fairness.

## PUBLICATIONS

---

### Publications and working papers in optimization:

- **Zikai Xiong** and Robert Freund, “Geometric Condition Numbers 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