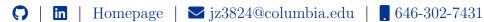
Jiayu Zhang



SUMMARY

Second-year PhD student in Operations Research at Columbia University with experience in machine learning for real-world problem-solving, large-scale optimization, and stochastic methods.

EDUCATION

2024 - present PhD in Operations Research at Columbia University (GPA: 3.9/4.3) New York, NY 2020 - 2024 BS in Mathematics at Shanghai Jiao Tong University (GPA: 3.9/4.3) Shanghai, China

EXPERIENCE

Student Researcher Intern at Cardinal Operations

Shanghai, China, Feb 2023 - Sep 2023

- − Demonstrated that stochastic first-order methods reduce computation time by ~90% for large-scale (>10,000 nodes) sensor network localization problems by benchmarking first-order and semi-definite programming based methods with commercial solvers.
- Developed theories on the geometry of the sensor network localization problem, establishing the foundation for a co-authored research paper.

PROJECTS

Layer-wise Learning Rates in Neural Network Pretraining

Jul 2025 - present

- Designed and implemented adaptive layer-wise optimizers within PyTorch, leveraging large-scale computing resources (NSF Access H100/V100 GPUs).
- Demonstrated improved performance (up to 0.8%) over baselines (e.g., SGD, Adam, and KFAC) when training VGG16 and ResNet32 on CIFAR-10/100 datasets and extended evaluation to language models (e.g., NanoGPT).

Publications

Lei, Mingyu, Jiayu Zhang, and Yinyu Ye (2023). "Blessing of high-order dimensionality: from non-convex to convex optimization for sensor network localization". In: arXiv preprint arXiv:2308.02278.

Goldfarb, Donald, Lexiao Lai, Tianyi Lin, and Jiayu Zhang (2025). "Non-Convex Self-Concordant Optimization". In: *Ongoing work*.

SKILLS

Coding Python (PyTorch, NumPy, SciPy, Pandas), Linux, Latex, Julia, Matlab

Languages English (fluent), Mandarin (native speaker)

Awards

2024 Fall Boyle Fellowship from Columbia University

Last updated: October 9, 2025