

Zijian Liu

+1 (201) 565-5192
zl3067@stern.nyu.edu
zl3067.github.io
Zijian Liu

Education

- Sept. 2022 **Department of Technology, Operations, and Statistics at Stern School of Business,**
– Dec. 2026 **New York University, NY**
(Expected) Ph.D. Candidate in Operations Management, advisor: Zhengyuan Zhou
- Sept. 2019 **Courant Institute of Mathematical Sciences, New York University, NY**
– May 2021 M.S. in Computer Science
- Sept. 2015 **School of Computer Science, Wuhan University, Wuhan, China**
– June 2019 B.Eng. in Software Engineering

Experience

- May 2026 **Thomas J. Watson Research Center, IBM Research, NY**
– Aug. 2026 Summer Research Internship

Research Interests

Mathematical Optimization, Theoretical Machine Learning

Publications & Manuscripts

(* indicates equal contribution, † indicates alphabetical order)

- COLT 2026 **Random Reshuffling Dominates Stochastic Gradient Descent**
Zijian Liu
[\[arXiv\]](#)[\[Proceedings\]](#)
- ICML 2026 **Can Adaptive Gradient Methods Converge under Heavy-Tailed Noise? A Case Study**
(To Appear) **of AdaGrad**
Zijian Liu
[\[arXiv\]](#)[\[OpenReview\]](#)
- ICLR 2026 **Clipped Gradient Methods for Nonsmooth Convex Optimization under Heavy-Tailed Noise: A Refined Analysis**
Zijian Liu
[\[arXiv \(Full Version\)\]](#)[\[OpenReview\]](#)
- ALT 2026 **Online Convex Optimization with Heavy Tails: Old Algorithms, New Regrets, and Applications**
Zijian Liu
[\[arXiv \(Full Version\)\]](#)[\[OpenReview\]](#)[\[Proceedings\]](#)
- ICML 2025 **Improved Last-Iterate Convergence of Shuffling Gradient Methods for Nonsmooth Convex Optimization**
Zijian Liu, Zhengyuan Zhou
[\[arXiv\]](#)[\[OpenReview\]](#)[\[Proceedings\]](#)
- ICLR 2025 **Nonconvex Stochastic Optimization under Heavy-Tailed Noises: Optimal Convergence without Gradient Clipping**
Zijian Liu, Zhengyuan Zhou
[\[arXiv\]](#)[\[OpenReview\]](#)[\[Proceedings\]](#)

- ICML 2024 **On the Last-Iterate Convergence of Shuffling Gradient Methods**
 (Oral) Zijian Liu, Zhengyuan Zhou
[\[arXiv\]](#)[\[OpenReview\]](#)[\[Proceedings\]](#)
- ICML 2024 **On the Convergence of Projected Bures-Wasserstein Gradient Descent under Euclidean Strong Convexity**
 Junyi Fan*, Yuxuan Han*, Zijian Liu, Jian-Feng Cai, Yang Wang, Zhengyuan Zhou
[\[OpenReview\]](#)[\[Proceedings\]](#)
- ICLR 2024 **Revisiting the Last-Iterate Convergence of Stochastic Gradient Methods**
 Zijian Liu, Zhengyuan Zhou
[\[arXiv \(Full Version\)\]](#)[\[OpenReview\]](#)[\[Proceedings\]](#)
- COLT 2023 **Breaking the Lower Bound with (Little) Structure: Acceleration in Non-Convex Stochastic Optimization with Heavy-Tailed Noise**
 Zijian Liu, Jiawei Zhang, Zhengyuan Zhou
[\[arXiv\]](#)[\[Proceedings\]](#)
- ICML 2023 **High Probability Convergence of Stochastic Gradient Methods**
 Zijian Liu*, Ta Duy Nguyen*, Thien Hang Nguyen*, Alina Ene, Huy L. Nguyen
[\[arXiv \(Full Version\)\]](#)[\[OpenReview\]](#)[\[Proceedings\]](#)
- ICLR 2023 **On the Convergence of AdaGrad(Norm) on $\mathbb{R}^d$: Beyond Convexity, Non-Asymptotic Rate and Acceleration**
 Zijian Liu*, Ta Duy Nguyen*, Alina Ene, Huy L. Nguyen
[\[arXiv\]](#)[\[OpenReview\]](#)
- ICML 2022 **Adaptive Accelerated (Extra-)Gradient Methods with Variance Reduction**
 Zijian Liu*, Ta Duy Nguyen*, Alina Ene, Huy L. Nguyen
[\[arXiv\]](#)[\[Proceedings\]](#)
- ICML 2022 **Distributionally Robust Q -Learning**
 Zijian Liu, Qinxun Bai, Jose Blanchet, Perry Dong, Wei Xu, Zhengqing Zhou, Zhengyuan Zhou
[\[Proceedings\]](#)
- Operations Research **Product Return as a Sequence of Search Processes: Optimality and Search Duration**
 Major Revision Xiaoyu Fan[†], Srikanth Jagabathula[†], Zijian Liu[†], Eitan Muller[†]
[\[Available upon Request\]](#)
- In Submission **Adam Converges in Nonsmooth Nonconvex Optimization**
 Zijian Liu
[\[arXiv\]](#)
- In Submission **In-Expectation Convergence of Stochastic Gradient Methods under Heavy-Tailed Noise**
 Zijian Liu
[\[arXiv\]](#)
- Manuscript **Near-Optimal Non-Convex Stochastic Optimization under Generalized Smoothness**
 Zijian Liu, Srikanth Jagabathula, Zhengyuan Zhou
[\[arXiv\]](#)
- Manuscript **Stochastic Nonsmooth Convex Optimization with Heavy-Tailed Noises: High-Probability Bound, In-Expectation Rate and Initial Distance Adaptation**
 Zijian Liu, Zhengyuan Zhou
[\[arXiv\]](#)
- Manuscript **META-STORM: Generalized Fully-Adaptive Variance Reduced SGD for Unbounded Functions**
 Zijian Liu*, Ta Duy Nguyen*, Thien Hang Nguyen*, Alina Ene, Huy L. Nguyen
[\[arXiv\]](#)

Talks

Jul. 2024 *25th International Symposium on Mathematical Programming*
 Jul. 2024 *41st International Conference on Machine Learning*
 Feb. 2026 *37th International Conference on Algorithmic Learning Theory*
 Mar. 2026 *2026 INFORMS Optimization Society Conference*
 Apr. 2026 *Thomas J. Watson Research Center, IBM Research*
 June 2026 *39th Annual Conference on Learning Theory*

Services

Conference *ICML 2022, 2024, 2025, 2026 (Gold Reviewer)*
 Reviewer *NeurIPS 2024, 2025, 2026*
ICLR 2025, 2026
ALT 2025, 2026
 Journal *IEEE Journal on Selected Areas in Information Theory (JSAIT)*
 Reviewer *IEEE Transactions on Automatic Control (TAC)*
IEEE Transactions on Control Systems Technology (TCST)
Journal of Machine Learning Research (JMLR)
Management Science
Mathematical Finance
SIAM Journal on Optimization (SIOPT)
Statistica Sinica
 Organizer *MOILS seminar (internal seminar series at NYU Stern) Spring 2023*

Teaching Experience

(**U** denotes undergraduate-level courses, **G** denotes graduate-level courses)

Summer 2025	Operations Management (U) , Instructor Class Size: 15 - Design and teach two 3-hour lectures per week independently - Grade assignments and exams and hold office hours	New York University
Fall 2024	Operations Management (U) , Teaching Fellow Instructor: Prof. Divya Singhvi Grade assignments and exams and hold office hours	New York University
Summer 2024	Stochastic Modeling & Simulation (U) , Teaching Fellow Instructor: Prof. Joshua Reed Grade assignments and exams and hold office hours	New York University
Fall 2020	Bayesian Machine Learning (G) , Section Leader Instructor: Prof. Andrew Gordon Wilson - Teach supplementary materials and advanced topics in recitation sessions - Grade assignments and exams and hold office hours	New York University