Zijian Liu

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⑂ Zijian Liu

Education

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

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Research Interests

Mathematical Optimization, Theoretical Machine Learning

Publications & Manuscripts

(* indicates equal contribution, † indicates alphabetical order)

ICML 2025   **Improved Last-Iterate Convergence of Shuffling Gradient Methods for Nonsmooth Convex Optimization** [Link]
Zijian Liu, Zhengyuan Zhou

ICLR 2025   **Nonconvex Stochastic Optimization under Heavy-Tailed Noises: Optimal Convergence without Gradient Clipping** [Link]
Zijian Liu, Zhengyuan Zhou

ICML 2024 (Oral)   **On the Last-Iterate Convergence of Shuffling Gradient Methods** [Link]
Zijian Liu, Zhengyuan Zhou

ICML 2024   **On the Convergence of Projected Bures-Wasserstein Gradient Descent under Euclidean Strong Convexity** [Link]
Junyi Fan*, Yuxuan Han*, Zijian Liu, Jian-Feng Cai, Yang Wang, Zhengyuan Zhou

ICLR 2024   **Revisiting the Last-Iterate Convergence of Stochastic Gradient Methods** [Link]
Zijian Liu, Zhengyuan Zhou

COLT 2023   **Breaking the Lower Bound with (Little) Structure: Acceleration in Non-Convex Stochastic Optimization with Heavy-Tailed Noise** [Link]
Zijian Liu, Jiawei Zhang, Zhengyuan Zhou

ICML 2023   **High Probability Convergence of Stochastic Gradient Methods** [Link]
Zijian Liu*, Ta Duy Nguyen*, Thien Hang Nguyen*, Alina Ene, Huy L. Nguyen

ICLR 2023   **On the Convergence of AdaGrad(Norm) on $\mathbb{R}^d$: Beyond Convexity, Non-Asymptotic Rate and Acceleration** [Link]
Zijian Liu*, Ta Duy Nguyen*, Alina Ene, Huy L. Nguyen

ICML 2022   **Adaptive Accelerated (Extra-)Gradient Methods with Variance Reduction** [Link]
Zijian Liu*, Ta Duy Nguyen*, Alina Ene, Huy L. Nguyen

ICML 2022   **Distributionally Robust Q-Learning** [Link]
Zijian Liu, Qinxun Bai, Jose Blanchet, Perry Dong, Wei Xu, Zhengqing Zhou, Zhengyuan Zhou

Operations Research Major Revision	**Product Return as a Sequence of Search Processes: Optimality and Search Duration** [Available upon request] Xiaoyu Fan[†], Srikanth Jagabathula[†], Zijian Liu[†], Eitan Muller[†]
In Submission	**Online Convex Optimization with Heavy Tails: Old Algorithms, New Regrets, and Applications** [Link] Zijian Liu
In Submission	**Clipped Gradient Methods for Nonsmooth Convex Optimization under Heavy-Tailed Noise: A Refined Analysis** [Available upon request] Zijian Liu
Manuscript	**Near-Optimal Non-Convex Stochastic Optimization under Generalized Smoothness** [Link] Zijian Liu, Srikanth Jagabathula, Zhengyuan Zhou
Manuscript	**Stochastic Nonsmooth Convex Optimization with Heavy-Tailed Noises: High-Probability Bound, In-Expectation Rate and Initial Distance Adaptation** [Link] Zijian Liu, Zhengyuan Zhou
Manuscript	**META-STORM: Generalized Fully-Adaptive Variance Reduced SGD for Unbounded Functions** [Link] Zijian Liu*, Ta Duy Nguyen*, Thien Hang Nguyen*, Alina Ene, Huy L. Nguyen

Invited Talks

Jul. 2024	*The 25th International Symposium on Mathematical Programming*
Jul. 2024	*The 41st International Conference on Machine Learning*

Services

Journal Reviewer	*IEEE Journal on Selected Areas in Information Theory (JSAIT)* *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*
Conference Reviewer	*ICML 2022, 2024, 2025* *NeurIPS 2024, 2025* *ICLR 2025* *ALT 2025*
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 ○ Teach regular class ○ 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 | New York University |
| | Instructor: Prof. Joshua Reed | |

○ Grade assignments and exams and hold office hours

| Fall 2020 | **Bayesian Machine Learning (G),** Section Leader | New York University |
| | Instructor: Prof. Andrew Gordon Wilson | |

○ Teach supplementary materials and advanced topics in recitation
○ Grade assignments and exams and hold office hours