

# Zijian Liu

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Zijian Liu

## Education

- Sept. 2022 – May 2026 **Department of Technology, Operations, and Statistics at Stern School of Business, New York University, NY**  
(Expected) 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

## Research Interests

Mathematical Optimization, Theoretical Machine Learning

## Publications & Manuscripts

(\* indicates equal contribution, † indicates alphabetical order)

- ALT 2026 (To appear) **Online Convex Optimization with Heavy Tails: Old Algorithms, New Regrets, and Applications** [Link]  
Zijian Liu
- 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	<b>Adaptive Accelerated (Extra-)Gradient Methods with Variance Reduction</b> <a href="#">[Link]</a> Zijian Liu*, Ta Duy Nguyen*, Alina Ene, Huy L. Nguyen
ICML 2022	<b>Distributionally Robust <math>Q</math>-Learning</b> <a href="#">[Link]</a> Zijian Liu, Qinxun Bai, Jose Blanchet, Perry Dong, Wei Xu, Zhengqing Zhou, Zhengyuan Zhou
Operations Research Major Revision	<b>Product Return as a Sequence of Search Processes: Optimality and Search Duration</b> <a href="#">[Available upon request]</a> Xiaoyu Fan <sup>†</sup> , Srikanth Jagabathula <sup>†</sup> , Zijian Liu <sup>†</sup> , Eitan Muller <sup>†</sup>
In Submission	<b>Clipped Gradient Methods for Nonsmooth Convex Optimization under Heavy-Tailed Noise: A Refined Analysis</b> <a href="#">[Link]</a> Zijian Liu
Manuscript	<b>Near-Optimal Non-Convex Stochastic Optimization under Generalized Smoothness</b> <a href="#">[Link]</a> Zijian Liu, Srikanth Jagabathula, Zhengyuan Zhou
Manuscript	<b>Stochastic Nonsmooth Convex Optimization with Heavy-Tailed Noises: High-Probability Bound, In-Expectation Rate and Initial Distance Adaptation</b> <a href="#">[Link]</a> Zijian Liu, Zhengyuan Zhou
Manuscript	<b>META-STORM: Generalized Fully-Adaptive Variance Reduced SGD for Unbounded Functions</b> <a href="#">[Link]</a> 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	<i>IEEE Journal on Selected Areas in Information Theory (JSAIT)</i>
Reviewer	<i>IEEE Transactions on Automatic Control (TAC)</i> <i>IEEE Transactions on Control Systems Technology (TCST)</i> <i>Journal of Machine Learning Research (JMLR)</i> <i>Management Science</i> <i>Mathematical Finance</i> <i>SIAM Journal on Optimization (SIOPT)</i> <i>Statistica Sinica</i>
Conference	<i>ICML 2022, 2024, 2025</i>
Reviewer	<i>NeurIPS 2024, 2025</i> <i>ICLR 2025, 2026</i> <i>ALT 2025, 2026</i>
Organizer	<i>MOILS seminar (internal seminar series at NYU Stern) Spring 2023</i>

## Teaching Experience

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

Summer 2025	<b>Operations Management (U)</b> , Instructor Class Size: 15	New York University
	<ul style="list-style-type: none"> <li>○ Design and teach two 3-hour lectures per week independently</li> <li>○ Grade assignments and exams and hold office hours</li> </ul>	

Fall 2024	<b>Operations Management (U)</b> , Teaching Fellow Instructor: Prof. Divya Singhvi ○ Grade assignments and exams and hold office hours	New York University
Summer 2024	<b>Stochastic Modeling &amp; Simulation (U)</b> , Teaching Fellow Instructor: Prof. Joshua Reed ○ Grade assignments and exams and hold office hours	New York University
Fall 2020	<b>Bayesian Machine Learning (G)</b> , 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