

JIANHAO MA

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RESEARCH INTERESTS

General optimization and generalization in machine learning.

EDUCATION

University of Michigan, Ann Arbor (GPA: 4.0/4.0)

Department of Industrial and Operational Engineering

Advisor: Prof. Salar Fattahi

January 2021 - 2025 (expected)

Ph.D. candidate

Tsinghua University (GPA: 3.75/4.0)

B.E. in Industrial Engineering and B.S. in mathematics

September 2016 - June 2020

University of California, Berkeley (GPA: 3.9/4.0)

Visiting student in the Department of Statistics

January 2019 - August 2019

INTERNSHIP

AI Lab, ByteDance

Machine learning engineer intern in deep reinforcement learning.

April 2020 - July 2020

PREPRINTS AND PUBLICATIONS

1. **Jianhao Ma**, Salar Fattahi, “On the Optimization Landscape of Burer-Monteiro Factorization: When do Global Solutions Correspond to Ground Truth?”, submitted for publication, 2023. [link]
2. **Jianhao Ma**, Salar Fattahi, “Global Convergence of Sub-gradient Method for Robust Matrix Recovery: Small Initialization, Noisy Measurements, and Over-parameterization”, *Journal of Machine Learning Research (JMLR)*, 2023. [link]
3. **Jianhao Ma**, Lingjun Guo, Salar Fattahi, “Behind the Scenes of Gradient Descent: A Trajectory Analysis via Basis Function Decomposition”, *International Conference on Learning Representations (ICLR)*, 2023. [link]
4. **Jianhao Ma**, Salar Fattahi, “Blessing of Nonconvexity in Deep Linear Models: Depth Flattens the Optimization Landscape Around the True Solution”, *Advances in Neural Information Processing Systems (NeurIPS)*, 2022 (**Spotlight**). [link]
5. Jiaye Teng*, **Jianhao Ma***, Yang Yuan, “Towards Understanding Generalization via Decomposing Excess Risk Dynamics”, *International Conference on Learning Representations (ICLR)*, 2022. [link]
6. **Jianhao Ma**, Salar Fattahi, “Sign-RIP: A Robust Restricted Isometry Property for Low-rank Matrix Recovery”, *NeurIPS Workshop on Optimization for Machine Learning*, 2021. [link]

ACTIVITIES/ACADEMIC SERVICE

Organizer

Co-organizer of the session “Recent Advances in Data-Driven Nonconvex Optimization” in INFORMS Annual Meeting, Anaheim, CA, October 2021.

Reviewer

ICML, NeurIPS, ICLR, NeurIPS Workshop on Optimization for Machine Learning.

Invited Talk/Presentation

Overparameterized Robust Matrix Recovery. INFORMS Annual Meeting, Anaheim, CA, October 2021.

Overparameterized Robust Matrix Recovery. MOPTA Conference, Bethlehem, PA, August 2021.