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) *January 2021 - 2025 (expected)*
Department of Industrial and Operational Engineering Ph.D. candidate
Advisor: Prof. Salar Fattahi

Tsinghua University (GPA: 3.75/4.0) *September 2016 - June 2020*
B.E. in Industrial Engineering and B.S. in mathematics

University of California, Berkeley (GPA: 3.9/4.0) *January 2019 - August 2019*
Visiting student in the Department of Statistics

EXPERIENCE

IIIS, Tsinghua University *August 2020 - June 2021*
Visiting student, hosted by Prof. Yuhao Wang.

AI Lab, ByteDance *April 2020 - July 2020*
Machine learning engineer intern in deep reinforcement learning.

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]

INVITED TALK/PRESENTATION

1. "Blessing of Nonconvexity in Deep Linear Models: Depth Flattens the Optimization Landscape Around the True Solution". INFORMS Annual Meeting, Indianapolis, IN, October 2022.

2. "Global Convergence of Sub-gradient Method for Robust Matrix Recovery: Small Initialization, Noisy Measurements, and Over-parameterization". INFORMS 2022 Optimization Society Conference, Greenville, SC, March 2022.
3. "Sign-RIP: A Robust Restricted Isometry Property for Low-rank Matrix Recovery". INFORMS Annual Meeting, Anaheim, CA, October 2021.
4. "Sign-RIP: A Robust Restricted Isometry Property for Low-rank Matrix Recovery". MOPTA Conference, Bethlehem, PA, August 2021.

ACTIVITIES/ACADEMIC SERVICE

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

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

PROFESSIONAL SKILLS

Programming Languages Python, MATLAB, R.