

Shaocong Ma | Curriculum Vitae

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Education

- ❖ **Ph.D. in Electrical and Computer Engineering** 2019–2024
University of Utah
- ❖ **M.A. in Statistics** 2017–2019
University of California, Santa Barbara
- ❖ **B.S. in Statistics** 2013–2017
Sichuan University

Academic & Research Experiences

- ❖ **Postdoctoral Associate**, University of Maryland, College Park Jun. 2024–present
Advisor: Prof. Heng Huang
 - Developed memory-efficient optimization algorithms for modern Large Language Models (LLMs);
 - Designed robust reinforcement learning (RL) algorithms for real-world applications.
- ❖ **Research Internship**, Lawrence Livermore National Laboratory May 2022–Aug. 2022
Advisor: Dr. Bhavya Kailkhura, Dr. James Diffenderfer
 - Implemented graph-based physics-informed neural networks (PINNs) for computational fluid dynamics (CFDs).
- ❖ **Research Assistant**, University of Utah Aug. 2019–May 2024
Advisor: Prof. Yi Zhou
 - Explored robust and efficient reinforcement learning (RL) and stochastic optimization theory.

Publications

- [1] Shaocong Ma and Heng Huang. “On the Optimal Construction of Unbiased Gradient Estimators for Zeroth-Order Optimization”. In: *Advances in Neural Information Processing Systems (NeurIPS)* (2025). *NeurIPS 2025 Spotlight*.
- [2] Shaocong Ma and Heng Huang. “Robust Reinforcement Learning in Finance: Modeling Market Impact with Elliptic Uncertainty Sets”. In: *Advances in Neural Information Processing Systems (NeurIPS)* (2025).
- [3] Shaocong Ma and Heng Huang. “Revisiting Zeroth-Order Optimization: Minimum-Variance Two-Point Estimators and Directionally Aligned Perturbations”. In: *International Conference on Learning Representations (ICLR)* (2025). *ICLR 2025 Spotlight*.
- [4] Shaocong Ma, Ziyi Chen, Yi Zhou, and Heng Huang. “Rectified Robust Policy Optimization for Model-Uncertain Constrained Reinforcement Learning without Strong Duality”. In: *Transactions on Machine Learning Research (TMLR)* (2025).
- [5] Shaocong Ma, James Diffenderfer, Bhavya Kailkhura, et al. “Deep learning of PDE correction and mesh adaption without automatic differentiation”. In: *Machine Learning* (2025).
- [6] Yi Zhou and Shaocong Ma. “Stochastic Optimization Methods for Policy Evaluation in Reinforcement Learning”. In: *Foundations and Trends in Optimization* (2024).
- [7] Shaocong Ma, Ziyi Chen, Shaofeng Zou, and Yi Zhou. “Decentralized Robust V-learning for Solving Markov Games with Model Uncertainty”. In: *The Journal of Machine Learning Research (JMLR)* (2023).

- [8] Ziyi Chen, Shaocong Ma, and Yi Zhou. "Accelerated proximal alternating gradient-descent-ascent for nonconvex minimax machine learning". In: *2022 IEEE International Symposium on Information Theory (ISIT)* (2022).
- [9] Ziyi Chen, Shaocong Ma, and Yi Zhou. "Finding correlated equilibrium of constrained Markov game: A primal-dual approach". In: *Advances in Neural Information Processing Systems (NeurIPS)* (2022).
- [10] Shaocong Ma, Ziyi Chen, Yi Zhou, Kaiyi Ji, and Yingbin Liang. "Data sampling affects the complexity of online sgd over dependent data". In: *Uncertainty in Artificial Intelligence (UAI)* (2022).
- [11] Ziyi Chen, Shaocong Ma, and Yi Zhou. "Sample efficient stochastic policy extragradient algorithm for zero-sum markov game". In: *International Conference on Learning Representations (ICLR)* (2021).
- [12] Shaocong Ma, Ziyi Chen, Yi Zhou, and Shaofeng Zou. "Greedy-GQ with Variance Reduction: Finite-time Analysis and Improved Complexity". In: *International Conference on Learning Representations (ICLR)* (2020).
- [13] Shaocong Ma and Yi Zhou. "Understanding the impact of model incoherence on convergence of incremental SGD with random reshuffle". In: *International Conference on Machine Learning (ICML)* (2020).
- [14] Shaocong Ma, Yi Zhou, and Shaofeng Zou. "Variance-reduced off-policy TDC learning: Non-asymptotic convergence analysis". In: *Advances in Neural Information Processing Systems (NeurIPS)* (2020).

Honors & Awards

- ❖ NeurIPS 2025, Top Reviewer Award 2025
- ❖ NeurIPS 2025, Spotlight (top 3% of submissions) 2025
- ❖ ICLR 2025, Spotlight (top 5% of submissions) 2025
- ❖ AISTATS 2025, Best Reviewer Award 2025
- ❖ Graduate 1st Place at University of Utah 2024
- ❖ Invited Monograph Contributor, Now Publishers (Foundations and Trends in Optimization) 2024
- ❖ Invited Participant (fully funded), NSF-Simons MoDL Annual Meeting, Simons Foundation, New York 2023
- ❖ Excellence Scholarship, The College of Mathematics, Sichuan University 2013–2017
- ❖ Second Prize, Chinese Mathematics Competitions for College Students, Sichuan Province Division 2014

Teaching Experiences

- ❖ **Teaching Assistant**, University of Utah 2020–2021
 - ECE 3500: Fundamentals of Signals and Systems
- ❖ **Teaching Assistant**, University of California, Santa Barbara 2018–2019
 - PSTAT 5A: Statistics; PSTAT 5LS: Statistics for Life Science; PSTAT 109: Statistics for Economics;
 - PSTAT 172A: Actuarial Statistics; PSTAT 175: Survival Analysis

Professional Services

- ❖ **Conference Reviewer**: ICML; ICLR; NeurIPS; IEEE BigData; IJCAI; UAI; AAAI; AISTATS; RLC.
- ❖ **Journal Reviewer**: Transactions on Machine Learning Research (TMLR); IEEE Transactions on Signal Processing (TSP); IEEE Transactions on Networking (ToN); IEEE Transactions on Emerging Topics in Computational Intelligence (TETCI); Scientific Reports; Numerical Algorithms; Nonlinear Dynamics; European Journal of Control.
- ❖ **Workshop Reviewer**: ICLR Blogpost.