

RUICHEN JIANG

rjiang@utexas.edu $\diamond$ ruichen-jiang.github.io $\diamond$ linkedin.com/in/ruichenj

EDUCATION

The University of Texas at Austin, Austin, TX

May 2026 (Expected)

Ph.D. in Electrical and Computer Engineering

Advisor: **Aryan Mokhtari**

Tsinghua University, Beijing, China

June 2020

B.Eng. in Electronic Engineering

B.Sc. in Pure and Applied Mathematics (Second Major)

WORK EXPERIENCE

Google Research

May 2025 - Jan 2026

Student Researcher

New York, NY

Mentors: **Zak Mhammedi**, **Mehryar Mohri**

Amazon Web Services

June 2023 - Aug 2023

Applied Scientist Intern

Santa Clara, CA

Mentors: **Parameswaran Raman**, **Shoham Sabach**, **Mingyi Hong**, **Volkan Cevher**

RESEARCH INTERESTS

Optimization and machine learning: second-order methods, online learning, min-max optimization, adaptive methods, bilevel optimization

PUBLICATIONS

Conference Papers (* denotes equal contribution)

- [C16] J. Cao, **R. Jiang**, E. Yazdandoost Hamedani, A. Mokhtari. “**On the Complexity of Finding Stationary Points in Nonconvex Simple Bilevel Optimization.**” *NeurIPS 2025*.
- [C15] **R. Jiang***, D. Maladkar*, A. Mokhtari. “**Convergence Analysis of Adaptive Gradient Methods under Refined Smoothness and Noise Assumptions.**” *COLT 2025*.
- [C14] **R. Jiang**, A. Mokhtari, F. Patitucci (α - β). “**Improved Complexity for Smooth Nonconvex Optimization: A Two-Level Online Learning Approach with Quasi-Newton Methods.**” *STOC 2025*.
- [C13] **R. Jiang**, A. Kavis, Q. Jin, S. Sanghavi, A. Mokhtari. “**Adaptive and Optimal Second-order Optimistic Methods for Minimax Optimization.**” *NeurIPS 2024*.
- [C12] **R. Jiang**, M. Dereziński, A. Mokhtari. “**Stochastic Newton Proximal Extragradient Method.**” *NeurIPS 2024*.
- [C11] Q. Jin, **R. Jiang**, A. Mokhtari. “**Non-asymptotic Global Convergence Analysis of BFGS with the Armijo-Wolfe Line Search.**” *NeurIPS 2024 (Spotlight)*.
- [C10] J. Cao, **R. Jiang**, E. Yazdandoost Hamedani, A. Mokhtari. “**An Accelerated Gradient Method for Simple Bilevel Optimization with Convex Lower-level Problem.**” *NeurIPS 2024*.
- [C9] **R. Jiang**, P. Raman, S. Sabach, A. Mokhtari, M. Hong, V. Cevher. “**Krylov Cubic Regularized Newton: A Subspace Second-Order Method with Dimension-Free Convergence Rate.**” *AISTATS 2024*.
- [C8] **R. Jiang**, A. Mokhtari. “**Accelerated Quasi-Newton Proximal Extragradient: Faster Rate for Smooth Convex Optimization.**” *NeurIPS 2023 (Spotlight, top 3%)*.
- [C7] J. Cao, **R. Jiang**, N. Abolfazli, E. Yazdandoost Hamedani, A. Mokhtari. “**Projection-Free Methods for Stochastic Simple Bilevel Optimization with Convex Lower-level Problem.**” *NeurIPS 2023*.

- [C6] **R. Jiang**, Q. Jin, A. Mokhtari. “Online Learning Guided Curvature Approximation: A Quasi-Newton Method with Global Non-Asymptotic Superlinear Convergence.” *COLT 2023*.
- [C5] **R. Jiang**, N. Abolfazli, A. Mokhtari, E. Yazdandoost Hamedani. “A Conditional Gradient-based Method for Simple Bilevel Optimization with Convex Lower-level Problem.” *AISTATS 2023*.
- [C4] M. Ye, **R. Jiang**, H. Wang, D. Choudhary, X. Du, B. Bhushanam, A. Mokhtari, A. Kejariwal, Q. Liu. “Future Gradient Descent for Adapting the Temporal Shifting Data Distribution in Online Recommendation System.” *UAI 2022*.
- [C3] **R. Jiang**, Y.-F. Liu. “Antenna Efficiency in Massive MIMO Detection.” *IEEE SPAWC 2021*.
- [C2] **R. Jiang**, S. Zhou, K. Huang. “Achieving Cooperative Diversity in Over-the-Air Computation via Relay Selection.” *IEEE VTC2020-Fall*.
- [C1] **R. Jiang**, S. Zhou. “Cluster-Based Cooperative Digital Over-the-Air Aggregation for Wireless Federated Edge Learning.” *IEEE/CIC ICC 2020*.

Journal Papers

- [J2] Q. Jin, **R. Jiang**, A. Mokhtari. “Non-asymptotic Global Convergence Rates of BFGS with Exact Line Search.” *Mathematical Programming*, 2025.
- [J1] **R. Jiang**, A. Mokhtari. “Generalized Optimistic Methods for Convex-Concave Saddle Point Problems.” *SIAM Journal on Optimization*, 2025.

Preprints

- [P5] F. Patitucci*, **R. Jiang***, Aryan Mokhtari. “Improving Online-to-Nonconvex Conversion for Smooth Optimization via Double Optimism.” 2025.
- [P4] **R. Jiang**, A. Kavis, A. Mokhtari (α - β). “Online Learning-guided Learning Rate Adaptation via Gradient Alignment.” 2025.
- [P3] **R. Jiang**, A. Mokhtari. “Online Learning Guided Quasi-Newton Methods with Global Non-Asymptotic Convergence.” 2024.
- [P2] N. Abolfazli, **R. Jiang**, A. Mokhtari, E. Yazdandoost Hamedani. “An Inexact Conditional Gradient Method for Constrained Bilevel Optimization.” 2023.
- [P1] **R. Jiang**, Y.-F. Liu, C. Bao, B. Jiang. “Tightness and Equivalence of Semidefinite Relaxations for MIMO Detection.” 2021.

MAJOR TALKS

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- “Accelerating Nonconvex Optimization via Online Learning”
 - **INFORMS Annual Meeting**, October 2025
 - **Cornell Young Researchers Workshop**, October 2025
 - “Online Learning Guided Quasi-Newton Methods: Improved Global Non-asymptotic Guarantees”
 - **International Conference on Continuous Optimization**, July 2025
 - **INFORMS Annual Meeting**, October 2024
 - **International Symposium on Mathematical Programming**, July 2024 (canceled due to visa issues)
 - “A Conditional Gradient Method for Simple Bilevel Optimization with Convex Lower-level Problem”
 - **INFORMS Optimization Society Conference**, March 2024
 - **Asilomar Conference on Signals, Systems, and Computers**, October 2023
 - “Online Learning Guided Curvature Approximation: A Quasi-Newton Method with Global Non-Asymptotic Superlinear Convergence”, **INFORMS Annual Meeting**, October 2023

- “Generalized Optimistic Methods for Convex-Concave Saddle Point Problems”, **SIAM Conference on Optimization (OP23)**, June 2023

SELECTED AWARDS AND HONORS

- Cornell Young Researchers Workshop, Invited Speaker, Cornell University, 2025
- ISyE-MS&E-IOE Rising Stars Workshop, Selected Participant, Georgia Tech, 2025
- UT Austin Graduate Fellowships: George J. Heuer, Jr. (2023), Harry Philip Whitworth (2021)
- Excellent Graduate (Top 10%) and Academic Excellence Award (Top 5%), Tsinghua University
- Joint 2nd place, Simon Marais Mathematics Competition, 2018 (355 participants globally)

PROFESSIONAL SERVICES

- Conference refereeing: NeurIPS 2022–2025 (**Top Reviewer** in 2022 & 2025); ICML 2022–2025; ICLR 2025; AISTATS 2023, 2024; ALT 2024; AAAI 2025; UAI 2023
- Journal refereeing: Mathematical Programming (**2023 Meritorious Service Award**), Journal of Machine Learning Research, Mathematics of Operations Research, Journal of Scientific Computing

TEACHING EXPERIENCE

- Teaching assistant: Large-Scale Optimization II (ECE 381V & CS 395T), Spring 2024

SKILLS

- **Programming:** Python (NumPy, PyTorch, JAX), MATLAB
- **Tools:** Git, Weights & Biases (W&B), Hydra