Qiang Fu

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Education

2024-Present **Yale University**, Department of Computer Science, New Haven, CT, USA
Ph.D. student, advised by Prof. Andre Wibisono

2021-2024 **Sun Yat-sen University**, School of Mathematics, Guangzhou, China
M.S. in Mathematics

2017-2021 **Sun Yat-sen University**, School of Mathematics, Guangzhou, China
B.S. in Mathematics

Research Interest

My research lies broadly in **optimization**, **statistics** and **machine learning**. I am particularly focused on developing provably efficient algorithms for optimization and sampling to improve the training and inference of modern machine learning models. I am also interested in various topics around **learning theory**, **generative models** and **machine unlearning**.

Publications (Google Scholar)

Qiang Fu, Andre Wibisono. "Hamiltonian Descent Algorithms for Optimization: Accelerated Rates via Randomized Integration Time." NeurIPS 2025 (Spotlight).

Qiang Fu, Vishwak Srinivasan, Andre Wibisono, Ashia Wilson. "Hamiltonian Descent Algorithm for Composite Optimization: Acceleration via Randomized Integration Time." Under review.

Austin Feng, **Qiang Fu**, Xiuyuan Wang, Andre Wibisono. "From Randomized Hamiltonian Flow to Fast Stochastic Optimization." NeurIPS 2025 Workshop on Dynamics at the Frontiers of Optimization, Sampling, and Games.

Qiang Fu, Ashia Wilson. "Mean-field Underdamped Langevin Dynamics and its Spacetime Discretization." ICML 2024.

Qiang Fu, Dongchu Xu, Ashia Wilson. "Accelerated Stochastic Optimization Methods under Quasar-convexity." ICML 2023.

Xiangkai Lian, **Qiang Fu**, Weijie Su, Xinyu Zhang, Jia Li and Zhengan Yao. "The Fractional Laplacian-based Image Inpainting." Inverse Problems and Imaging. 2024.

Research Experience

2024-Present **Yale CS**, Research assistant advised by Prof. Andre Wibisono.

- Research on accelerating convex optimization as well as bridging optimization and sampling via Hamiltonian flow (NeurIPS 2025, spotlight).
- Accelerating convex composite optimization via Hamiltonian flow (under review).

2022-2024 **MIT EECS**, Research student advised by Prof. Ashia Wilson.

- Conducted research on fast algorithms for training two-layer neural networks based on the spacetime discretization of mean-field underdamped Langevin dynamics with provable convergence guarantees (ICML 2024).
- Developed new provably accelerated stochastic optimization algorithms for minimizing quasar-convex functions with applications in efficiently training linear dynamical systems and generalized linear models (ICML 2023).

2021-2022 **School of Mathematics, Sun Yat-sen University**, Research student.

- Collaborated on fractional Laplacian-based image inpainting (IPI 2023).

Honors and Awards

2024 Yale University PhD Fellowships
2023 National Scholarship (top 0.2% in China), Ministry of Education
2023 First Prize Scholarship, Sun Yat-sen University
2022 National Scholarship (top 0.2% in China), Ministry of Education
2022 First Prize Scholarship, Sun Yat-sen University
2022 Meritorious Winner, Mathematical Contest in Modeling
2021 First Prize Scholarship, Sun Yat-sen University

Skills

Programming: Python, PyTorch, Matlab, LaTeX
Language: Chinese (native), English (fluent; TOEFL iBT: 100)

Services

Reviewer of AISTATS 2023, ICLR (2025, 2026), NeurIPS 2025

Seminar Talks and Presentations

2025 Optimization and Statistical Learning Workshop, Columbia University. Poster presentation: *Hamiltonian Descent Algorithms for Optimization: Accelerated Rates via Randomized Integration Time.*

2024 Yale FDS Conference: Recent Advances and Future Directions for Sampling. Poster presentation: *Mean-field Underdamped Langevin Dynamics and its Spacetime Discretization.*

2024 ICML 2024, Vienna, Austria, Messe Wien Exhibition Congress Center. Poster presentation: *Mean-field Underdamped Langevin Dynamics and its Spacetime Discretization.*

2023 ICML 2023, Hawaii Convention Center. Poster presentation: *Accelerated Stochastic Optimization Methods under Quasar-convexity.*