Xiao Mao(毛啸)

Phone: +1 617 955 7652
Email: matthew99a@gmail.com
             xiaomao@stanford.edu
Website: matthew99a.github.io

Education

- **Stanford University**
  Ph.D
  2022 to Present
  - Field: Theoretical Computer Science
- **Massachusetts Institute of Technology**
  M.Eng.
  2021 to 2022
  - Thesis Supervisor: Virginia Vassilevska Williams
- **Massachusetts Institute of Technology**
  B.S. in Computer Science and Engineering and in Mathematics
  2017 to 2021

Research and Work Experience

- **Pika (Mellis, Inc.), Palo Alto, CA**
  Intern
  Summer 2025
  - AI research intern.
- **Stanford University**
  Ph.D. currently advised by Prof. Aviad Rubinstein
  Sep. 2022 to present
  - Focus on algorithms and complexity.
- **Massachusetts Institute of Technology**
  M.Eng. with thesis supervised by Prof. Virginia Vassilevska Williams
  Sep. 2021 to Sep. 2022
  - Focus on algorithms and complexity.
- **Massachusetts Institute of Technology**
  UROP advised by Professor Michael Sipser
  Feb. 2020 to Dec. 2020
  - Focus on algorithms and complexity.
- **Microsoft Corporation, Bellevue, WA**
  Intern
  Summer 2019
  - Software engineer intern.
- **Pony.ai, Inc., Fremont, CA**
  Intern
  Summer 2018
  - Software engineer intern.

Publications

[1] Ran Duan, Jiayi Mao, Xiao Mao, Xinkai Shu, and Longhui Yin. Breaking the sorting barrier for directed single-source shortest paths, 2025. URL: `https://arxiv.org/abs/2504.17033`, `arXiv:2504.17033`.
(STOC 2025 Best Paper) (Invited to the Journal of the ACM)

[2] Xiao Mao. $(1 - \epsilon)$-approximation of knapsack in nearly quadratic time. In *Proceedings of the 56th Annual ACM Symposium on Theory of Computing*, STOC 2024, page 295–306, New York, NY, USA, 2024. Association for Computing Machinery. `doi:10.1145/3618260.3649677` (In ACM Symposium on Theory of Computing (STOC 2024)).

[3] Xiao Mao. Fully dynamic all-pairs shortest paths: Likely optimal worst-case update time. In *Proceedings of the 56th Annual ACM Symposium on Theory of Computing*, STOC 2024, page 1141–1152, New York, NY, USA, 2024. Association for Computing Machinery. `doi:10.1145/3618260.3649695` (In ACM Symposium on Theory of Computing (STOC 2024)).

[4] Xiao Mao Mingyang Deng, Ce Jin. Approximating Knapsack and Partition via Dense Subset Sums. In *Proceedings of the 2023 ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2023.

[5] Ziqian Zhong Mingyang Deng, Xiao Mao. On Problems Related to Unbounded SubsetSum: A Unified Combinatorial Approach. In *Proceedings of the 2023 ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 2023.

[6] Xiao Mao. Breaking the Cubic Barrier for (Unweighted) Tree Edit Distance. In *Proceedings of the 62nd IEEE Symposium on Foundations of Computer Science (FOCS)*, 2021.
(Machtey Award for Best Student Paper, sole winner) (Published in the SICOMP Special Issue for FOCS 2021)

Selected Awards and Scholarships

- **STOC 2025**
  Best Paper   *2025*
- **FOCS 2021**
  Best Student Paper (Machtey Award, single author, sole winner)   *2021*
- **45th ICPC World Finals**
  Gold medal, **1st place**   *November 2022*
- **International Olympiad in Informatics**
  Silver medal   *July to August 2017*
- **National Olympiad in Informatics, China**
  Gold medal, 1st place   *July 2016*

Talks

- **Breaking the Cubic Barrier for (Unweighted) Tree Edit Distance**
  – FOCS 2021   *Feb 2022*
  – Yao Class student seminar   *Sep 2021*
  – Theory seminar at the University of Washington   *Mar 2022*

- **Fully Dynamic All-Pairs Shortest Paths: Likely Optimal Worst-Case Update Time**
  – STOC 2024   *June 2023*

- $(1 - \epsilon)$**-Approximation of Knapsack in Nearly Quadratic Time**
  – STOC 2024   *June 2023*

- **Approximating Knapsack and Partition via Dense Subset Sums**
  – SODA 2023   *Jan 2023*

Service

- Conference Reviewing: ITCS 2022, SWAT 2022, MFCS 2022, SODA 2024, STOC 2024, FOCS 2024, SODA 2025, SOSA 2025, STOC 2025