Xiao Mao(毛啸)

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Education

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

Research and Work Experience

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

Selected Awards and Scholarships

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

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