Xiao Mao

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Phone:      +1 617 955 7652
Email:      matthew99a@gmail.com
            xiaomao@stanford.edu
Website:    matthew99a.github.io
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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 Rubenstein
    - 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
    - Research projects on algorithms and complexity. Finished two manuscripts.

- **Microsoft Corporation, Bellevue, WA** — *Summer 2019*
  Intern
    - Studied Hopscotch Hashing and its performance, both theoretical and practical.

- **Pony.ai, Inc., Fremont, CA** — *Summer 2018*
  Intern
    - Migrated the build tool from Bash to a 1000-line standardized Python script with improved functionality.

Publications

[1] 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) (Invited to the SICOMP Special Issue for FOCS 2021)**

[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.

Older Manuscripts

[1] Xiao Mao. Shortest non-separating st-path on chordal graphs. 2020

[2] Xiao Mao. A natural extension to the convex hull problem and a novel solution. 2020

Selected Awards and Scholarships

- **FOCS 2021**
  Best Student Paper (Machtey Award)   *2021*
- **45th ICPC World Finals1**
  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 seminar   *Sep 2021*

- **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, SODA 2025