

# Xiao Mao

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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** 2021  
Best Student Paper (Machtey Award)
- **45th ICPC World Finals<sup>1</sup>** 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 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, SOSA 2025