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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)**
- [2] 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)**
- [3] 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)).
- [4] 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)).
- [5] 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.
- [6] 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** 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