Tao Yu

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Education

PhD Student in Computer Science — Aug 2024 – June 2028
Northeastern University
  Advisor: Mahsa Derakhshan

M.S. in Data Science — Aug 2022 – Dec 2023
Columbia University

B.S. in Mathematics, Honors Program — Aug 2018 – June 2022
University of California, Los Angeles

Publications

A Unified Framework for Analysis of Randomized Greedy Matching Algorithms
M. Derakhshan, T. Yu
ACM Symposium on Theory of Computing — **STOC 2026**

Improved Approximation For Ranking on General Graphs
M. Derakhshan, M. Roghani, M. Saneian, T. Yu
ACM-SIAM Symposium on Discrete Algorithms — **SODA 2026**

A Simple Analysis of Ranking in General Graphs
M. Derakhshan, M. Roghani, M. Saneian, T. Yu
SIAM Symposium on Simplicity in Algorithms — **SOSA 2026**

Research Experience

Northeastern University — 2024 – Present
Research Assistant

- Led analysis of improved approximation guarantees for randomized greedy matching algorithms (RANKING, FRANKING).
- Conducted experimental validation and implemented evaluation pipelines using Gurobi.

Columbia University — Jul 2023 – Dec 2023
Independent Algorithmic Project

- Explored parallel algorithms for Euclidean spanner construction and flow rounding in transshipment problems.

Selected Technical Projects

Adaptive Bitrate Streaming Proxy, Columbia — 2023

- Built ABR server proxy in Python to parse and modify HTTP requests and optimize video quality under measured network throughput.

Dynamic Memory Allocator, UCLA — 2021

- Developed memory allocation algorithms (explicit/implicit free lists, segmented/non-segmented) and optimized structures to balance fragmentation and efficiency; top 10% performance in class.

Technical Skills

- Languages: Python, C++
- Tools & Frameworks: Gurobi, LaTeX

Academic Service

- Reviewer: SOSA 2026, FOCS 2025
- Teaching Assistant:
  - Algorithms, Fall 2025, Northeastern University
  - Algorithms for Data Science, Fall 2023, Columbia University