

Xinkai Shu

Contact Information

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Research Interest

Online Algorithms
Algorithmic Game Theory
Fundamental Graph Algorithms

Academic Positions

2025 – now	Postdoctoral researcher Algorithm & Complexity Max Planck Institute for Informatics
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Education

2019 – 2024	Doctor of Philosophy Computer Science The University of Hong Kong Supervisor: Prof. Zhiyi Huang
2015 – 2019	Bachelor of Engineering Computer Science and Technology (Yao Class) Tsinghua University Instructor: Prof. Ran Duan

Conference Publications

Authors are listed in alphabetical order following the traditions of theoretical computer science, unless stated otherwise.

Online Matching Meets Sampling Without Replacement [[arXiv](#)]
Zhiyi Huang, Chui Shan Lee, Jianqiao Lu and Xinkai Shu
20th Conference on Web and Internet Economics (**WINE 2024**)

Online Nash Welfare Maximization Without Predictions [[arXiv](#)]

Zhiyi Huang, Minming Li, Xinkai Shu and Tianze Wei

19th Conference on Web and Internet Economics (**WINE 2023**)

A Randomized Algorithm for Single-Source Shortest Path on Undirected Real-Weighted Graphs [[arXiv](#)]

Ran Duan, Jiayi Mao, Xinkai Shu and Longhui Yin

64th IEEE Annual Symposium on Foundations of Computer Science (**FOCS 2023**)

The Power of Multiple Choices in Online Stochastic Matching [[arXiv](#)]

Zhiyi Huang, Xinkai Shu and Shuyi Yan

54th ACM SIGACT Symposium on Theory of Computing (**STOC 2022**)

Online Stochastic Matching, Poisson Arrivals, and the Natural Linear Program [[arXiv](#)]

Zhiyi Huang and Xinkai Shu

53rd ACM SIGACT Symposium on Theory of Computing (**STOC 2021**)

Preprints

Theses

Online Matching and Resource Allocation under Stochasticity

Doctoral thesis, advised by Prof. Zhiyi Huang, 2024

Quick Algorithms for Dynamic Edge Coloring (in Chinese)

Bachelor thesis, instructed by Prof. Ran Duan, 2019

Invited Talks

A Randomized Algorithm for Single-Source Shortest Path on Undirected Real-Weighted Graphs

- CCF Forum for distinguished Ph.D. Candidates in Theoretical Computer Science 2023

The Hong Kong Polytechnic University, July 20-21, 2023

- Institute for Theoretical Computer Science (ITCS) Seminar

Shanghai University of Finance and Economics, July 11, 2023

Online Nash Welfare Maximization Without Predictions

- Complexity & Algorithms Workshop 2023

Shandong University, April 1-2, 2023

The Power of Multiple Choices in Online Stochastic Matching

- International Joint Conference on Theoretical Computer Science – Frontier of Algorithmic Wisdom (IJTCS-FAW) 2022

City University of Hong Kong, August 15-19, 2022 (virtually)

Research Visits

Mar – Aug 2023 Institute for Theoretical Computer Science
Shanghai University of Finance and Economics

Honors and Awards

2014 **Gold Medal**
China National Olympiad of Informatics

2013 **Gold Medal**
China National Olympiad of Informatics

Services

Subreviewer of Conferences:

STOC 2025, SODA 2025, ICALP 2024, SODA 2024, ICALP 2023, ISSAC 2023, SODA 2023, STOC 2022

Teaching Experience

Teaching assistant at *The University of Hong Kong*:

2022 Spring	COMP 3250B	Design and analysis of algorithms
2021 Fall	COMP 3250A	Design and analysis of algorithms (Advanced)
2021 Fall	COMP 3351	Advanced algorithm analysis
2020 Spring	COMP 3250A	Design and analysis of algorithms

Additional Information

Language	Native Chinese, Fluent English, Intermediate Japanese
Programming	Proficient in C++, Python, PASCAL, used to be competitive programmer
Puzzle	I love solving puzzles, especially mathematical puzzles (e.g. sudoku, kakuro, slitherlink and masyu), as well as chess problems, go problems and tsume-shogi