Xinkai Shu

Contact Information

Office	LG101, Chow Yei Ching Building Department of Computer Science The University of Hong Kong
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Research Interest

Online Algorithms
Approximation Algorithms
Algorithmic Game Theory
Fundamental Graph Algorithms

Education

2019 – 2024 **Doctor of Philosophy**
Computer Science
The University of Hong Kong
Advisor: 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]
with Zhiyi Huang, Chui Shan Lee & Jianqiao Lu
20th Conference on Web and Internet Economics (**WINE 2024**)

Online Nash Welfare Maximization Without Predictions [arXiv]
with Zhiyi Huang, Minming Li & 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]
with Ran Duan, Jiayi Mao & Longhui Yin
64th IEEE Annual Symposium on Foundations of Computer Science (**FOCS 2023**)

The Power of Multiple Choices in Online Stochastic Matching [arXiv]
with Zhiyi Huang & Shuyi Yan
54th ACM SIGACT Symposium on Theory of Computing (**STOC 2022**)

Online Stochastic Matching, Poisson Arrivals, and the Natural Linear Program [arXiv]
with Zhiyi Huang
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 1 – Aug 31 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

External Reviewer of Conferences:
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