Kuowen Chen

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Education

Bachelor of Computer Science and Technology *Sept. 2022-July 2026(Expected)*
Tsinghua University *Beijing, China*
Department: Institute for Interdisciplinary Information Sciences(Yao Class)

- GPA: 3.70/4.00
- **Selected Coursework:** Abstract Algebra(A), Algorithm Design(A-), Design and Analysis of Algorithms(A+), Mathematics for Computer Science(A), Algebra and Computation(A+), Theory of Computation(A)

Exchange Visitor at University of Michigan *Mar. 2025-July 2025*

Research Interests

Theoretical Computer Science — Graph Algorithms, Approximation, Data Structures, and Combinatorics.

Publications and Manuscripts

- **Kuowen Chen**, Jian Li, Yuval Rabani, Yiran Zhang. *New Results on a General Class of Minimum Norm Optimization Problems*. In **Proceedings of ICALP 2025**.
- Zixi Cai, **Kuowen Chen**, Shengquan Du, Tsvi Kopelowitz, Seth Pettie, Ben Plosk. *Contention Resolution, With and Without a Global Clock*. In preparation for submission to *STOC 2026*.
- Zixi Cai, **Kuowen Chen**, Shengquan Du, Arnold Filtser, Seth Pettie, Daniel Skora. *The Squishy Grid Problem*. Preprint, *arXiv:2507.23105*, targeted for *SoCG 2026*.
- **Kuowen Chen**, Nicole Wein, Yiran Zhang. *A Polynomial-Time Algorithm for the Next-to-Shortest Path Problem on Positively Weighted Directed Graphs*. Manuscript in preparation, targeted for *STOC 2026*.

Presentations

- *New Results on a General Class of Minimum Norm Optimization Problems*. In **ICALP2025**.

Selected Research Experiences

- **Norm Optimization** (Advisors: Prof. Jian Li and Prof. Yuval Rabani) *Oct. 2023 – Apr. 2025*
  - This project worked on a general class of minimum-norm optimization problems and helped develop new structural insights and approximation algorithms. Through this project, I strengthened my understanding of LP rounding techniques, and improved my research writing skills. The work was published in the proceedings of *ICALP 2025*.
- **Contention Resolution** (Advisor: Prof. Seth Pettie) *Apr. 2025 – present*
  - In this project, we study acknowledgement-based contention resolution protocols, both with and without access to a global clock, and have derived upper and lower bounds on their latencies. This project has deepened my understanding of probabilistic analysis. This work is ongoing and targeted for submission to *STOC 2026*.
- **Next-to-Shortest Path** (Advisor: Prof. Nicole Wein) *Mar. 2025 – present*
  - This work resolves a long-standing open problem concerning the next-to-shortest path problem on directed graphs with positive weights. We are preparing the manuscript for submission to *STOC 2026*.

- **The Squishy Grid Problem** (Advisor: Prof. Seth Pettie) *Mar. 2025 – July 2025*
  - In this project, we consider the problem of approximating Euclidean distances by the infinite integer grid graph. We derived a deterministic construction of such a grid graph and conducted experiments on random graphs. Through this project, I also studied background knowledge on First-Passage Percolation. Ongoing work is targeted for submission to *SoCG 2026*.

Skills

- **Programming Languages**: Pascal, C++, Python
- **Tools and Technologies**: Git, LaTeX

Selected Awards and Honors

- **Gold Medal (22nd Place)**, National Olympiad in Informatics Winter Camp *2021*
- **Gold Medal (31st Place)**, National Olympiad in Informatics *2021*
- **Gold Medal (4th Place)**, China Collegiate Programming Contest (Weihai), Team of 3 *2022*
- Second-class Freshman Scholarship of Tsinghua University *2022,2023,2024*

Languages

- **Chinese**: Native
- **English**: TOEFL iBT(MyBest): 96 (R 23, L 22, S 22, W 29);
  - Highest single test: 95 (R 23, L 22, S 22, W 28, Oct. 2025).