

Renfei Zhou

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EDUCATION

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| Carnegie Mellon University Ph.D. in Computer Science co-advised by William Kuszmaul and Guy E. Blelloch | 2024–Present |
| Tsinghua University B.Eng. in Computer Science, Yao Class, Institute for Interdisciplinary Information Sciences • Thesis: Time Lower Bounds for Classical Open-Addressing | 2020–2024 |

SELECTED AWARDS AND FELLOWSHIPS

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| • Frontiers of Science Awards Awarded by the International Congress of Basic Science | 2025 |
| • Jane Street Graduate Research Fellowship | 2025 |
| • MongoDB PhD Fellowship | 2025 |
| • Outstanding Bachelor Thesis Award (Tsinghua University) Awarded to 4 students in Yao Class each year | 2024 |
| • China National Scholarship Awarded to 4–5 students in Yao Class each year | 2023 |
| • Yao Award (Silver Medal) Awarded to 3 students in Yao Class each year | 2023 |
| • China Collegiate Programming Contest Finals Gold award, 3rd place (with teammates Yixuan Even Xu and Binwei Yan) | 2021 |
| • ACM International Collegiate Programming Contest, Asia Regional Contest, Jinan Site Gold medal, 1st place (with teammates Binwei Yan and Zheyu Zhang) | 2020 |
| • International Olympiad in Informatics China Team Selection 5th place | 2020 |
| • China National Olympiad in Informatics Gold medal, 11th place | 2019 |

SELECTED PUBLICATIONS

Authors are in alphabetical order.

Succinct Dynamic Rank/Select: Bypassing the Tree-Structure Bottleneck
William Kuszmaul, Jingxun Liang, **Renfei Zhou**. In *Proc. SODA*, 2026.

Fingerprint Filters are Optimal
William Kuszmaul, Jingxun Liang, **Renfei Zhou**. In *Proc. FOCS*, 2025.

Static Retrieval Revisited: To Optimality and Beyond
Yang Hu, William Kuszmaul, Jingxun Liang, Huacheng Yu, Junkai Zhang, **Renfei Zhou**. In *Proc. FOCS*, 2025.

Optimal Static Fully Indexable Dictionaries
Jingxun Liang and **Renfei Zhou**. In *Proc. ICALP*, 2025.

Optimal Non-Oblivious Open Addressing

Michael A. Bender, William Kuszmaul, **Renfei Zhou**. In *Proc. STOC*, 2025.

Optimal Static Dictionary with Worst-Case Constant Query Time

Yang Hu, Jingxun Liang, Huacheng Yu, Junkai Zhang, **Renfei Zhou**. In *Proc. STOC*, 2025.

More Asymmetry Yields Faster Matrix Multiplication

Josh Alman, Ran Duan, Virginia Vassilevska Williams, Yinzhan Xu, Zixuan Xu, **Renfei Zhou**. In *Proc. SODA*, 2025.

Tight Bounds and Phase Transitions for Incremental and Dynamic Retrieval

William Kuszmaul, Aaron Putterman, Tingqiang Xu, Hangrui Zhou, **Renfei Zhou**. In *Proc. SODA*, 2025.

Tight Bounds for Classical Open Addressing

Michael A. Bender, William Kuszmaul, **Renfei Zhou**. In *Proc. FOCS*, 2024.

Dynamic Dictionary with Subconstant Wasted Bits per Key

Tianxiao Li, Jingxun Liang, Huacheng Yu, **Renfei Zhou**. In *Proc. SODA*, 2024.

New Bounds for Matrix Multiplication: From Alpha to Omega

Virginia Vassilevska Williams, Yinzhan Xu, Zixuan Xu, **Renfei Zhou**. In *Proc. SODA*, 2024.

Covered in [Quanta Magazine](#); [Frontiers of Science Award 2025](#).

Faster Matrix Multiplication via Asymmetric Hashing

Ran Duan, Hongxun Wu, **Renfei Zhou**. In *Proc. FOCS*, 2023.

Covered in [Quanta Magazine](#); [Frontiers of Science Award 2025](#).

Dynamic “Succincter”

Tianxiao Li, Jingxun Liang, Huacheng Yu, **Renfei Zhou**. In *Proc. FOCS*, 2023.

Tight Cell-Probe Lower Bounds for Dynamic Succinct Dictionaries

Tianxiao Li, Jingxun Liang, Huacheng Yu, **Renfei Zhou**. In *Proc. FOCS*, 2023.

Covered in [Quanta Magazine](#).

OTHER PUBLICATIONS

Authors are in alphabetical order.

Bidder Selection Problem in Position Auctions: A Fast and Simple Algorithm via Poisson Approximation

Nick Gravin, Yixuan Even Xu, **Renfei Zhou**. In *Proc. ACM Web Conference (WWW)*, 2024. **Oral**.

Listing 6-Cycles

Ce Jin, Virginia Vassilevska Williams, **Renfei Zhou**. In *Proc. SODA*, 2024.

On the Perturbation Function of Ranking and Balance for Weighted Online Bipartite Matching

Jingxun Liang, Zhihao Gavin Tang, Yixuan Even Xu, Yuhao Zhang, **Renfei Zhou**. In *Proc. ESA*, 2023.

SERVICE

- Conference reviewing: SODA (2024, 2025, 2026), FOCS 2024, STOC 2025, ICALP 2024, ISAAC 2024, SODA 2026
- Journal reviewing: Algorithmica (2025)
- **Randomized Algorithms (CMU)** Fall 2024
Teaching assistant (Instructor: William Kuszmaul)
- **Yao Class Research Seminar** 2023–2024
Co-organizer; invited speaker
- **Yao Class Course-Review Seminar** 2020–2023
Co-organizer; main speaker for multiple courses
- **Theory of Computation (Tsinghua University)** Spring 2022
Teaching assistant (Instructor: Ran Duan)

RESEARCH VISITS

- **Massachusetts Institute of Technology** Spring 2023
Visiting student advised by Virginia Vassilevska Williams
- **Shanghai University of Finance and Economics** Summer 2021
Summer research internship, advised by Zhihao Gavin Tang