

# Renfei Zhou

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Last Update: March 15, 2026

## EDUCATION

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- Carnegie Mellon University** 2024.08–Present  
Ph.D. in Computer Science, advised by [William Kuszmaul](#) and [Guy E. Blelloch](#)
- Tsinghua University** 2020.09–2024.06  
B.Eng. in Computer Science, Yao Class, Institute for Interdisciplinary Information Sciences
- Thesis: *Time Lower Bounds for Classical Open-Addressing*

## SELECTED AWARDS AND FELLOWSHIPS

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- **Frontiers of Science Award** 2025.07  
International Congress of Basic Science (ICBS); awarded to two papers on matrix multiplication
- **Jane Street Graduate Research Fellowship** 2025.03  
Awarded to 9 PhD students worldwide
- **MongoDB PhD Fellowship** 2025.03  
Awarded to 3 PhD students worldwide
- **Outstanding Bachelor Thesis Award (Tsinghua University)** 2024.06  
Awarded to 4 students in Yao Class

## SELECTED PUBLICATIONS

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*Authors are in alphabetical order.*

### [Succinct Dynamic Rank/Select: Bypassing the Tree-Structure Bottleneck](#)

William Kuszmaul, Jingxun Liang, **Renfei Zhou**. In *Proc. SODA*, 2026.

### [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 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.

### [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](#).

## VISITS AND INTERNSHIPS

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- **Massachusetts Institute of Technology** 2023.03–2023.08  
Visiting Student Researcher, hosted by Virginia Vassilevska Williams
- **Shanghai University of Finance and Economics** 2021.06–2021.08  
Research Intern, advised by Zhihao Gavin Tang
- **Megvii Technology** 2020.01–2020.02  
Research Intern

## TEACHING

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- **Randomized Algorithms (CMU)** Fall 2024  
Teaching Assistant (Instructor: William Kuszmaul)
- **Theory of Computation (Tsinghua University)** Spring 2022  
Teaching Assistant (Instructor: Ran Duan)

## SERVICE

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- **Concurrent Data Structures Workshop (NYU Tandon)** 2026.01  
Organizer
- **Princeton Workshop on Data Structures** 2025.04  
Organizer
- **Yao Class Research Seminar** 2023–2024  
Co-organizer; invited speaker
- **Yao Class Course-Review Seminar** 2020–2023  
Co-organizer; main speaker for multiple courses
- **Conference Reviewing:** SODA (2024, 2025, 2026), FOCS 2024, STOC 2025, ICALP (2024, 2026), ISAAC 2024, SOSA 2026
- **Journal Reviewing:** Algorithmica (2025)

## ADDITIONAL PUBLICATIONS

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*Authors are in alphabetical order except for papers marked with an asterisk (\*).*

**Workload-Aware Incremental Reclustering in Cloud Data Warehouses\***  
Yipeng Liu, **Renfei Zhou**, Jiaqi Yan, Huanchen Zhang. In *Proc. SIGMOD*, 2026.

**Fingerprint Filters Are Optimal**  
William Kuszmaul, Jingxun Liang, **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.

**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.

### 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.

## ADDITIONAL AWARDS

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- **China National Scholarship** 2023.10  
Awarded to 4-5 students in Yao Class
- **Yao Award (Silver Medal)** 2023.09  
Awarded to 3 students in Yao Class
- **Tsinghua University Comprehensive Excellence Scholarship** 2021.12 and 2022.12
- **China Collegiate Programming Contest Finals (Gold Award)** 2021.05  
3rd place nationwide (with teammates Yixuan Even Xu and Binwei Yan)
- **ACM International Collegiate Programming Contest, Asia Regional Contest, Jinan Site (Gold Medal)** 2020.12  
1st place (with teammates Binwei Yan and Zheyu Zhang)
- **International Olympiad in Informatics China Team Selection** 2020.08  
5th place nationwide
- **China National Olympiad in Informatics (Gold Medal)** 2019.07  
11th place nationwide