

Zihan Zhang

Columbus, Ohio,
United States, 43210

Email: zhang.13691@osu.edu

Mobile: +1 (380) 895-2732

Personal Website: <https://zihanzhang.owlstown.net/>

EDUCATION

The Ohio State University

Ph.D. Candidate in Computer Science and Engineering

Columbus, United States

2023.01—Present

Shanghai Jiao Tong University

Graduate Student in Cyberspace Security, with Mathematical Aspects

Shanghai, China

2021.9—2022.10

Sichuan University

B.S. in Mathematics GPA: 3.76/4 Rankings: 3/172

Exchange student at Peking University 2019.9-2020.1

Chengdu, China

2017.9—2021.6

VISITING EXPERIENCE

- Research intern at Toyota Technological Institute at Chicago (**TTIC**) under the guidance of Prof. Madhur Tulsiani during Summer 2025.
- Short term visitor at **University of Michigan, Ann Arbor** from July 2024 to August 2024, hosted by Prof. Mahdi Cheraghchi.
- **Invited** as a long term (Spring 2024) visiting graduate student in the program **Error-Correcting Codes: Theory and Practice** at **Simons Institute for the Theory of Computing** at University of California, **Berkeley**, hosted by Prof. Venkatesan Guruswami.
- Visiting Graduate Student at **Johns Hopkins University** from July 2023 to August 2023, hosted by Prof. Xin Li.

RESEARCH INTERESTS

Coding Theory, Pseudorandomness, Combinatorics, Applications of Coding Theory into Cryptography

CONFERENCE PUBLICATIONS AND PREPRINTS

In mathematics and theoretical computer science, authors are ordered alphabetically and contribute equally to the project, unless otherwise stated.

1. Joshua Brakensiek, Yeyuan Chen, Manik Dhar, and **Zihan Zhang**. *Combinatorial Bounds for List Recovery via Discrete Brascamp–Lieb Inequalities*, To Appear at the *58th Annual ACM Symposium on Theory of Computing (STOC 2026)*. <https://arxiv.org/abs/2510.13775>
2. Joshua Brakensiek, Yeyuan Chen, Manik Dhar, and **Zihan Zhang**. *From Random to Explicit via Subspace Designs With Applications to Local Properties and Matroids*, To Appear at the *58th Annual ACM Symposium on Theory of Computing (STOC 2026)*. <https://arxiv.org/abs/2510.13777>
3. Yeyuan Chen, Mahdi Cheraghchi, King-Siong Si, and **Zihan Zhang**. *Evidence Toward a Conjecture in List Recoverability of Folded Reed–Solomon Codes*, Manuscript.
4. Yeyuan Chen and **Zihan Zhang**. *Explicit Folded Reed–Solomon and Multiplicity Codes Achieve Relaxed Generalized Singleton Bounds*, In *Proceedings of the 57th Annual ACM Symposium on Theory of Computing (STOC 2025)*. **Sole Winner of the Danny Lewin Best Student Paper Award** <https://arxiv.org/abs/2408.15925>
5. Zeyu Guo, Chaoping Xing, Chen Yuan, and **Zihan Zhang**. *Gabidulin Codes Achieve List Decoding Capacity with an Order Optimal Column-To-Row Ratio*, To appear at the *29th International Conference on Randomization and Computation (RANDOM 2025)*.
6. Joshua Brakensiek, Yeyuan Chen, Manik Dhar, and **Zihan Zhang**. *Unique Decoding of Reed–Solomon and Related Codes for Semi-Adversarial Errors*, ArXiv Preprint. <https://arxiv.org/abs/2504.10399>
7. Roni Con, Zeyu Guo, Ray Li, and **Zihan Zhang**. *Random Reed–Solomon Codes Achieve the Half-Singleton Bound for Insertions and Deletions over Linear-Sized Alphabets*, In *Proceedings of the 52nd EATCS International Colloquium on Automata, Languages, and Programming (ICALP 2025)*. <https://arxiv.org/abs/2407.07299>
8. Zeyu Guo, Chaoping Xing, Chen Yuan, and **Zihan Zhang**. *Random Gabidulin codes achieve list decoding capacity in the rank metric*, In *Proceedings of the 65th IEEE Symposium on Foundations of Computer Science (FOCS 2024)*. <https://arxiv.org/abs/2404.13230>

9. Joshua Brakensiek, Manik Dhar, Sivakanth Gopi, and **Zihan Zhang**. *AG codes achieve list decoding capacity over constant-sized fields*, In *Proceedings of the 56th Annual ACM Symposium on Theory of Computing (STOC 2024)*. <https://arxiv.org/abs/2310.12898>
10. Zeyu Guo and **Zihan Zhang**. *Randomly Punctured Reed–Solomon Codes Achieve the List-Decoding Capacity over Polynomial-Size Alphabets*, In *Proceedings of the 64th IEEE Symposium on Foundations of Computer Science (FOCS 2023)*. <https://ieeexplore.ieee.org/abstract/document/10353231>

JOURNAL PUBLICATIONS

In mathematics and theoretical computer science, authors are ordered alphabetically and contribute equally to the project, unless otherwise stated.

1. Omar Alrabiah, Zeyu Guo, Venkatesan Guruswami, Ray Li, and **Zihan Zhang**. *Random Reed–Solomon Codes Achieve List-Decoding Capacity With Linear-Sized Alphabets*, *Advances in Combinatorics* (October 2025). <https://doi.org/10.19086/aic.2025.8>
2. Joshua Brakensiek, Manik Dhar, Sivakanth Gopi, and **Zihan Zhang**. *AG codes achieve list decoding capacity over constant-sized fields*, *IEEE Transactions on Information Theory* (2025). <https://ieeexplore.ieee.org/abstract/document/11027159>
3. **Zihan Zhang**. *A New Metric on Symmetric Group and Applications to Block Permutation Codes*, In *Journal Designs, Codes and Cryptography*, 91, 2255–2271 (2023). <https://doi.org/10.1007/s10623-023-01197-6> (Bachelor Thesis)

SELECTED HONORS

- **The 6th International Congress of Chinese Mathematicians (ICCM) Best Thesis Award** (Formerly known as New World Mathematics Award, NWMA) with *Silver Medal of Bachelor Thesis*, founded by Prof. **Shing-Tung Yau**. <http://yau-bta.com/en/show-86-37.html>
- **Winner** of the *Danny Lewin Best Student Paper Award* at STOC 2025. <https://acm-stoc.org/stoc2025/STOCprogram.html>
- **Invited** to the program *Error-Correcting Codes: Theory and Practice Reunion* at **Simons Institute for the Theory of Computing** at University of California, Berkeley during April 21 to April 25, 2025.
- **Invited** to the *New Mathematical Directions in Coding Theory Workshop* at Oberwolfach Research Institute for Mathematics, Oberwolfach, Germany during September 7 to September 12, 2025.

TALKS

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| 1. Junior Theorists Workshop 2025
https://theory.cs.northwestern.edu/2025/11/14/junior-theorists-workshop-2025/ | December, 2025 |
| 2. ECCs: Theory and Practice Reunion, Simons Institute for the Theory of Computing
https://simons.berkeley.edu/talks/zihan-zhang-ohio-state-university-2025-04-23 | April, 2025 |
| 3. CFCS Youth Talk, Peking University (Online)
https://cfcs.pku.edu.cn/english/events/cfcs_youth_forum/242618.htm | March, 2025 |
| 4. The 65th Annual IEEE Symposium on Foundations of Computer Science, Chicago, USA | October, 2024 |
| 5. Combinatorics Seminar, Math Department of The Ohio State University
https://u.osu.edu/combinatorics/autumn-2024/ | September, 2024 |
| 6. ECC Colloquium, Simons Institute for the Theory of Computing
https://simons.berkeley.edu/events/ecc-colloquium | February, 2024 |
| 7. The 64th Annual IEEE Symposium on Foundations of Computer Science, Santa Cruz, USA | November, 2023 |

PROGRAMMING LANGUAGE AND SOFTWARE SKILLS

SageMath, L^AT_EX, MATLAB, Python

SERVICE TO THE COMMUNITY

Reviewer for IEEE Transactions on Information Theory, IEEE BITS, RANDOM 2024, ICALP 2025, ISIT 2025, RANDOM 2025, SODA 2026

REFERENCES

Prof. Mahdi Cheraghchi (mahdich@umich.edu), Prof. Noga Ron-Zewi (nronzewi@ds.haifa.ac.il), and Prof. Zeyu Guo (guo.2148@osu.edu).