

Zhaienhe Zhou

(Ethan Zhou)

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Research Interests

I'm broadly interested in topics related to theoretical computer science, including randomized algorithms, graph theory, etc.

Education

2022 – 2026 (expected)

📖 **Bachelor in Computer Science, University of Science and Technology of China (USTC)**

School of the Gifted Young

GPA: **3.71/4.30**, Average score: **88.25**, Rank **40/210**

Talent Program in Computer Science (Yingcai Class)

Instructor: Prof. Xue Chen

Selected Courses: Foundations of Algorithms (100/100), Data Structures (97/100), Introduction to Computer System (Honor, 90/100), Linear Algebra (90/100), Probability Theory and Mathematical Statistics (90/100), Graph Theory (88/100), Mathematical Analysis (88/100), Computational Methods (87/100)

2021 – 2022

📖 **High school, The Affiliated High School of Peking University Yuanpei Class** (for outstanding students)

Admitted to the School of the Gifted Young of USTC during the first year of high school.

Skills

Languages 📖 TOEFL: 98, GRE: 322+3, CET-6: 629.





Skills 📖 fundamental algorithms & data structures (proficient), C & C++ (familiar)
Competitive Programming: **ICPC 2024 World-Finalist (expected)**, rewarded in NOI, ICPC Regional Contests & **East Continent Final (2 gold medals)**, USACO and [Codeforces](#).

Publications

Submitted

- 1 X. Chen, W. Shu, and **Z. Zhou**, *Learning sparse parity with noise in linear samples (draft)*, 2024. 🔗 [URL: https://arxiv.org/abs/2407.19215](https://arxiv.org/abs/2407.19215).

Projects

- 2024.7 – 2024.8  **Improved decoding of tanner codes** (in preparation)
With Prof. Zeyu Guo
1. Present improved algorithms for decoding tanner codes.
 2. Investigated previous work on expander codes, tanner codes, and insertion-deletion codes.
- 2024.2 – present  **Learning Sparse Parity with Noise in Linear Samples** (in review)
With Prof. Xue Chen and Wenxuan Shu
1. Present improved algorithms in both low-noise & high-noise settings.
 2. Investigated previous LPN algorithms.
- 2023.9 – 2024.1  **Expansion on regular Graph**
Supervisor: Prof. Xue Chen
1. Investigated two approaches for establishing lower bounds on graph expansions: the second eigenvalue method and the girth method. Gained knowledge of their theoretical foundations and limitations.
 2. Explored potential avenues for enhancing the girth method to derive stronger lower bounds on graph expansions. Analyzed existing approaches and evaluated the challenges and limitations in improving the methodology.
- 2022.9 – 2022.12  **Course Project: MicroDNN ([Website](#))**
1. Implemented a lightweight library for DNNs in C++. The library provides various APIs for DNN operations and is easy to use due to its minimal dependencies and high-level encapsulation.
 2. Conducted literature research on classic algorithms in Deep Neural Networks (DNN).
 3. Evaluated the performance of MicroDNN on multiple datasets, identifying performance bottlenecks in convolution layers and proposing potential optimizations.

Honors and Awards

Scholarships


- 2023.10  **Silver Scholarship.** Awarded by the School of the Gifted Young, University of Science and Technology of China.
- 2022.10  **Talent Program Scholarship,** achieved excellent results in the entrance examination of the University of Science and Technology of China, entered the Talent Program in Computer Science and Technology (Hua Xia), and was awarded the Talent Program Scholarship.
- 2022.9  **Admission Scholarship.** Awarded by the School of the Gifted Young, University of Science and Technology of China.

Honors and Awards (continued)



Competitive programming

- 2024.3  **2430 contest rating** on Codeforces.
- 2024.1  **Gold Medal, 14th place** in the 2023 ICPC **Asia-East Continent Final** Contest.
- 2023.12  **Gold Medal, 6th place** in the 2023 ICPC Asia Hangzhou Regional Contest.
- 2023.10  **Gold Medal, 6th place** in the 2023 ICPC Asia Xian Regional Contest.
- 2023.3  **Gold Medal, 28th place** in the 2022 ICPC **Asia-East Continent Final** Contest.
- 2023.1  **Gold Medal, 8th place** in the 2022 ICPC Asia Xian Regional Contest.
- 2022.11  **Gold Medal, 27th place** in the 2022 ICPC Asia Shenyang Regional Contest.
- 2022  **Silver Medal**, in the 2022 NOI-CCF Winter Camp.
- 2021  **Bronze Medal**, National Olympiad of Informatics of China.
- 2020, 2021  **First Prize** in National Olympiad in Informatics in Provinces (Beijing).
- 2020  **Silver Medal** in the 2020 Asia-Pacific Informatics Olympiad, China region.



Math

- 2023  **Second Prize** in the National College Student Mathematics Competition, Non-Mathematics Category.

Teaching


- 2024.2 – 2024.6  **Teaching Assistant**, Foundations of Algorithms, USTC. Designed lab assignments and conducted weekly office hours.
- 2024.1 – 2024.2  Competition Coach, TopsCoding, Winter 2024 Coding Course. Presented tutorials on string algorithms and number theory.

Activities


- 2022.9 – 2024.6  **Vice President, Computer Programming Club**, University of Science and Technology of China (USTC) and **Member, Publicity Department, Student Union of the School of the Gifted Young**, USTC. Effectively managed and executed related responsibilities.
- 2022 – 2023  Achieved third place in the USTC Freshman Eaglet Cup Football Tournament (2022). Ranked in the top 20 out of 300 participants in the November 2023 short-distance marathon at USTC.

References

Prof. Xue Chen

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Prof. Zeyu Guo

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