

Ziqian Zhong

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🎓 Education

Massachusetts Institute of Technology,

Candidate for B.S. in Computer Science and Mathematics

GPA: 5.0/5.0

Selected Coursework: Computation Structures (A+), Elements of Software Construction (A+), Advanced Data Structure (A+), Advanced Complexity Theory (A), Quantitative Methods for Natural Language Processing (A), Machine Learning (A), Fundamentals of Statistics (A), Combinatorial Theory (A), Number Theory I (A)

08/2020 – 06/2024

Cambridge, MA

📄 Publications

The Clock and the Pizza: Two Stories in Mechanistic Explanation of Neural Networks, *Ziqian Zhong*, Ziming Liu*, Max Tegmark, Jacob Andreas; Oral @ NeurIPS 2023* [🔗](#)

06/2023

Algorithmic Capabilities of Random Transformers,
Ziqian Zhong, Jacob Andreas; NeurIPS 2024

06/2024

On Problems Related to Unbounded SubsetSum: A Unified Combinatorial Approach, *Mingyang Deng*, Xiao Mao*, Ziqian Zhong*; SODA 2023* [🔗](#)

02/2022

Grokking as Compression: A Nonlinear Complexity Perspective, *Ziming Liu, Ziqian Zhong, Max Tegmark; NeurIPS 2023 UniReps Workshop* [🔗](#)

12/2023

New Additive Approximations for Shortest Paths and Cycles, *Mingyang Deng*, Yael Kirkpatrick*, Victor Rong*, Virginia Vassilevska Williams*, Ziqian Zhong*; ICALP 2022* [🔗](#)

07/2022

New Lower Bounds and Upper Bounds for Listing Avoidable Vertices,
Mingyang Deng, Virginia Vassilevska Williams*, Ziqian Zhong*; MFCS 2022* [🔗](#)

08/2022

👛 Experiences

Deep Learning Undergraduate Researcher,
Massachusetts Institute of Technology

Took part in deep learning research with a focus on interpreting and understanding neural networks. Worked with Neil Thompson, Jacob Andreas, and Ziming Liu.

08/2022 – 06/2024

Cambridge, MA

Theoretical Computer Science Undergraduate Researcher, <i>Massachusetts Institute of Technology</i> A member of the research team guided by Virginia Vassilevska Williams. Co-discovered several new results in graph theory and combinatorics. Resulted in several published papers.	10/2021 – 05/2022 Cambridge, MA
Algo Developer Intern, Hudson River Trading Conducted both market and algorithmic research. Project featured in intern spotlights ↗ .	05/2023 – 08/2023 New York, NY
Research Scientist, Pika Responsible for developing and improving large-scale video generation models.	06/2024 – present Palo Alto, CA

Talks

Two Stories in Mechanistic Explanation of Neural Networks, <i>NeurIPS 2023, with Ziming Liu</i>	12/2023 New Orleans, LA
New Approach for Unbounded SubsetSum, SODA 2023	01/2023 Florence, Italy

Selected Awards

Gold Medal, Fourth Place, International Olympiad in Informatics 2019	08/2019
Gold Medal, 46th ICPC World Final	04/2024
First Place, ICPC North America Championship 2022	05/2022
Fourth Place, Meta Hacker Cup 2023	12/2023
Honorable Mention, Alibaba Global Mathematics Competition 2022	06/2022
Honorable Mention, Putnam Mathematical Competition 2022	12/2022

Selected Projects

Is my problem new?, http://yuantiji.ac/ A tool that employs LLM and vector embeddings to search for competitive problems with similar ideas. Problem setters can use it to check similarity between newly proposed problems and existing problems. Has ~20k page views per month and is widely accepted and adopted by problemsetters in major competitive programming contests.	11/2023
CP Ideas, https://fjzzq2002.github.io/cpideas/ ↗ A tool that generates competitive programming problems by fine-tuning GPT-3. Collected and cleaned data from various online judges.	07/2022