Ziqian Zhong

✉ ziqianz@andrew.cmu.edu   🔗 fjzzq2002.github.io

🎓 Education

Massachusetts Institute of Technology,   08/2020 - 06/2024
Candidate for B.S. in Computer Science and Mathematics   Cambridge, MA
GPA: 5.0/5.0
Selected Coursework: Quantitative Methods for Natural Language
Processing (A), Multi-agent communication (A), Machine Learning (A),
Computation Structures (A+), Elements of Software Construction (A+),
Advanced Data Structure (A+), Advanced Complexity Theory (A),
Fundamentals of Statistics (A), Combinatorial Theory (A), Number
Theory I (A)

📰 Publications

The Clock and the Pizza: Two Stories in Mechanistic Explanation of   06/2023
Neural Networks, *Ziqian Zhong*, Ziming Liu*, Max Tegmark, Jacob*
Andreas; Oral @ NeurIPS 2023 ⬀

Algorithmic Capabilities of Random Transformers,   06/2024
Ziqian Zhong, Jacob Andreas; NeurIPS 2024

On Problems Related to Unbounded SubsetSum: A Unified Combinatorial   02/2022
Approach, *Mingyang Deng*, Xiao Mao*, Ziqian Zhong*; SODA 2023* ⬀

Grokking as Compression: A Nonlinear Complexity Perspective, *Ziming*   12/2023
Liu, Ziqian Zhong, Max Tegmark; NeurIPS 2023 UniReps Workshop ⬀

New Additive Approximations for Shortest Paths and Cycles, *Mingyang*   07/2022
Deng*, Yael Kirkpatrick*, Victor Rong*, Virginia Vassilevska
Williams*, Ziqian Zhong*; ICALP 2022 ⬀

New Lower Bounds and Upper Bounds for Listing Avoidable Vertices,   08/2022
Mingyang Deng*, Virginia Vassilevska Williams*, Ziqian Zhong*; MFCS
2022 ⬀

💼 Experiences

Deep Learning Undergraduate Researcher,   08/2022 - 06/2024
Massachusetts Institute of Technology   Cambridge, MA
Took part in deep learning research with a focus on interpreting and
understanding neural networks. Worked with Neil Thompson, Jacob
Andreas, and Ziming Liu.

Theoretical Computer Science Undergraduate Researcher, 10/2021 – 05/2022
Massachusetts Institute of Technology Cambridge, MA
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.

Algo Developer Intern, *Hudson River Trading* 05/2023 – 08/2023
Conducted both market and algorithmic research. Project featured in New York, NY
intern spotlights ⎘ .

Research Scientist, *Pika* 06/2024 – present
Responsible for developing and improving large-scale video generation Palo Alto, CA
models. Contributed to the release of Pika 1.5.

🗨 Talks

Two Stories in Mechanistic Explanation of Neural Networks, 12/2023
NeurIPS 2023, with Ziming Liu 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/* ⎘ 11/2023
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.

CP Ideas, *https://fjzzq2002.github.io/cpideas/* ⎘ 07/2022
A tool that generates competitive programming problems by fine-tuning
GPT-3. Collected and cleaned data from various online judges.