

Eric Zhan

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Education

Massachusetts Institute of Technology

Sep 2024 - Jun 2028

Bachelor of Science in Electrical Engineering and Computer Science

- Relevant coursework: Fundamentals of Programming (Python), Circuits and Electronics, Linear Algebra, Differential Equations, Multivariate Calculus, Physics II

Experience

Program for Research in Mathematics, Engineering and Science (MIT PRIMES-USA)

Jan 2023 – Jan 2024

Researcher

- Solved a 50+ year old unsolved math question regarding a combinatorial game with applications in number theory with a mentor.
- Used computational methods to discern patterns and assist the problem solving process.
- Presented my findings at the annual MIT PRIMES conference and at the Brandeis University Dynamics and Number Theory Seminar.
- V. Nekrasov and E. Zhan, *On Nontrivial Winning and Losing Parameters of Schmidt Games*, arXiv e-prints (2024), <https://doi.org/10.48550/arXiv.2401.00614>.

Institute for Computing in Research

Jul 2023 - Aug 2023

Researcher

- Performed research in optics and plasma imaging using computational methods.
- Developed open source Python software to research new models of ray tracing and geometric optics.
- Collaborated with a mentor from Los Alamos National Laboratory.
- Codeberg repository: https://codeberg.org/eric.zhan/Geometric_Optics_Corrections_Simulations

Daily Challenge with Po-Shen Loh

Feb 2022 - Jul 2024

Instructor

- Effectively taught concepts in math competitions to students using pre-prepared materials from Professor Loh.
- Collaborated with partner teaching assistants in classes and outreach “livesolve” events.
- Engaged and motivated students to learn; inspired students to enjoy mathematics.

Youth Hand in Hand

Feb 2021 - Jun 2023

Vice President

- Managed a student led volunteer organization dedicated to teaching and tutoring local middle school students for free.
- Organized and led outreach events, expanded teacher base by 150%.
- Taught a series of classes on competition math (Mathcounts, AMC) to middle school students.
- Collaborated with other instructors to develop lesson plans and curriculum.
- Earned President’s Volunteer Service Award (Gold) for 100+ hours of service.

Awards

- Regeneron Science Talent Search Scholar (2024)
- USA Math Olympiad Bronze Medalist (2023), Junior Math Olympiad Winner (2022), Honorable Mention (2021)
- USA Physics Olympiad 2x Silver Medalist (2024, 2023), Bronze Medalist (2022)
- National Merit Scholarship Semifinalist (2024)
- President’s Volunteer Service Award Gold (2022)

Skills

- Programming Languages: Python, Javascript, C++
- Libraries: Keras, Tensorflow, numpy, scipy, jupyter
- Web frameworks: Django, Next, React.
- Other: LaTeX, SQLite, AWS, Linux.

Projects

- Omegacat, a bot for the MIT Class of 2028 Discord to help students find peers sharing their classes.
- Technologic, a grid-based logic puzzle solver with a custom SAT solver under the hood.
- Collections Plus, a Python library implementing a variety of data structures common in competitive programming.
- Additional projects can be found at <https://ericzhan.me/projects/>