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), USACO Silver Division
– National Merit Scholarship Finalist (2024)
– President's Volunteer Service Award Gold (2022)

Skills

– Programming Languages: Python, Javascript, C++
– Libraries: Keras, Tensorflow, numpy, scipy, jupyter
– Web frameworks: Django, Next.js, 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/