Rowechen Zhong

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Education

Massachusetts Institute of Technology **Class of 2025**

Physics and Computer Science Double Major

Inference and Information • Machine Learning • Natural Language Processing • Quantum Field Theory
Quantum Information Science • Stochastic Processes • Theory of Probability • Lie Algebra

Programming Skills

Python, PyTorch, Tensorflow, Java, LaTeX, C++, Linux

Honors / Awards

Putnam Math Competition: Honorable Mention *2022*

International Physics Olympiad (IPhO): Silver Medal, team USA *2022*

USA Mathematics Olympiad (USAMO): Honorable Mention, rank 19th *2021*

USA Computing Olympiad (USACO): Platinum division, Gold division perfect score *2021*

Asian Pacific Mathematics Olympiad (APMO): Bronze Medal, rank 6th in USA *2022*

Harvard-MIT Invitational Competition: Rank 3rd *2022*

Work Experience

Undergraduate Researcher: *Marin Soljačić Group* **2023 – date**

Researching machine learning models to solve high-dimensional partial differential equations such as strongly correlated many body systems. Supervisor: Di Luo

Undergraduate Researcher: *Lienhard Research Group* **2022 – 2023**

Researching machine learning models to solve fluid equations. Designed a novel method of training models that are robust to perturbations and transparent to physical interpretation. Implemented using Pytorch. Supervisor: Danyal Rehman

Founder and Director: *Photon* **2021 – 2022**

Director of private classes for math, physics, and computer science olympiads. Designed and delivered over 70 hours of lectures to over 40 students. Authored hundreds of pages of course material, homework assignments, and solutions.

Programming Projects

Accelerated Quantum Approximate Optimisation Algorithm **2023**

Extended the QAOA algorithm for Maxcut through intelligent precomputation of subgraph hyperparameters. Won first place in the Quantinuum Challenge at the MIT-CQE iQuHACK Hackathon.

Wordbash **2023**

Developed a full-stack MERN application. Wordbash is an online party game that uses OpenAI models to generate humorous prompts. Won prize for most engaging project at MIT WebLab.

Pineapple *(MIT Battlecode Programming Competition)* **2022, 2023**

Designed algorithms in Java to play strategy games. Implemented pathfinding, complex strategies, and communications with limited computational resources using distributed algorithms.

EduNet **2022**

Developed clear and concise ML library for educational use. EduNet is written completely in Numpy, and includes Convolution and Recurrent layers, various activation functions, and a Deep Q-learning framework.

Community Service

Head Coach: *Canyon Vista Middle School Science Bowl / Mathcounts* **2019 – 2022**

Taught physics and mathematics, developed strategy, administered practice matches. Guided team to the national science bowl competition twice.

Director: *Tree Mathematics Contest* **2021**

Organized a mathematics contest for middle and high school students. Created an online community of over 180 students. 92 students in 25 teams participated.