

Rowechen Zhong

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Education

Massachusetts Institute of Technology

Class of 2024

Physics and Computer Science Double Major

GPA 5.0

Inference and Information • Machine Learning • Natural Language Processing • Quantum Field Theory
Statistical Field Theory • Quantum Information Science • Stochastic Calculus • Lie Algebra

Programming Skills

Python, PyTorch, NumPy, Java, C++, Git, L^AT_EX

Honors / Awards

Putnam Math Competition: Top 25	2024
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

Incoming Quantitative Research Intern: <i>Citadel Securities</i>	Summer 2024
Undergraduate Researcher: <i>Lienhard Research Group</i>	2022 – 2023
Researched machine learning models to solve fluid equations. Designed training methods prioritizing robustness to perturbations and physical interpretability. Implemented using Pytorch. Supervisor: Danyal Rehman	
Founder and Director: <i>Photon</i>	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 and assignments.	

Programming Projects

Pineapple (<i>First Place Team @ MIT Pokerbots Programming Competition</i>)	2024
Designed algorithms to play a difficult variant of NLHE Poker. Won first place.	
<ul style="list-style-type: none">Implemented and iterated upon a deep counterfactual regret minimization agent. Techniques included action quantization, heuristic info-set bucketing, and distributed tree searches / model training across 8 V100 GPUs and 300+ CPU threads.Constructed a flexible development environment facilitating fast iteration for team members. Automated parallelized scrimmage matches between conventional and AI agents. Automated hyperparameter searches. Constructed visualizers for model outputs.	
Accelerated Quantum Approximate Optimisation Algorithm	2023
Extended the QAOA algorithm for Maxcut through intelligent precomputation of subgraph hyperparameters. Won first place in the Quantum 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.	
Manticore	2023
Implemented a transformer-based language model from scratch in PyTorch, with beam search and BPE.	
Pineapple (<i>MIT Battlecode Programming Competition</i>)	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 implementations of common architectures for educational use. EduNet is written completely in Numpy, and includes Convolution and Recurrent layers, various activation functions, and a Deep Q-learning framework.	