

Education

Massachusetts Institute of Technology

S.B. candidate in Mathematics with Computer Science

Sep 2022 – present

GPA: 5.0/5.0

Selected Coursework: 18.702 Algebra II, 18.600 Probability, 18.650 Statistics, 6.390 Machine Learning, 6.122 Algorithms II;
Fall 2023: 18.675 Probability (G), 18.615 Stochastic Processes (G), 18.404 Theory of Computation

Skills and Languages

Python, Mathematica: Proficient (> 2 years)

C++, C#, Matlab, Javascript: Intermediate (1 year)

Foreign languages: Mandarin Chinese (Native), Japanese (Proficient; JLPT N2 180/180)

Selected Work Experience

LINE: Software Engineering Intern

Jul 2023 - Sep 2023

Working in detecting anomalies in live API metrics data. Wrote PromQL queries to obtain datasets for training of clustering algorithms. Reduced online computational cost using exponential smoothing, implemented live on a Kubernetes cluster using Helm charts.

Alphalab Capital: Quantitative Research Intern

May 2023 - Jul 2023

Designed statistical arbitrage strategies for cryptocurrency linear perpetuals based off Reddit sentiment analysis data; backtesting results over 3 year duration achieved 50% annualized returns and Sharpe ratio 4.0

Victoris Education Group: Co-Founder

Nov 2021 - Jul 2022

Founded an education group providing academic enrichment programmes to Singapore students. Connected 150 students with 20 tutors. Oversaw admin operations and individually managed up to 10 sessions weekly.

Singapore Armed Forces: Finance Administrator (mandatory military service)

Jan 2020 - Nov 2021

Managed accounting, procurement, and finances for a 200-men battalion. Facilitated purchases in activities ranging from daily operations within the battalion to the nation-wide National Day Parade.

Projects and Competitions

MIT Pokerbots: rank 14th/96 teams

January 2023

○ Built a Python bot that played a variant of heads-up poker against opponent bots; overall win rate of 73%.

Weaver: HackMIT 2022 sponsor prize winner (multiple listed below)

October 2022

○ Built a decentralized mobile matchmaking app using Flutter SDK on the Solana blockchain

○ Implemented machine learning algorithms on Intersystems, predicted user matches with an accuracy of 0.85

○ Winner of multiple sponsor prizes: 1st place - JumpCrypto, 2nd place - Intersystems, 2nd place - Solana

Quantum Blockchain: HackBoston 2022 sponsor prize winner: 2nd place - Cartesi

September 2022

○ Linked blockchain with quantum technology by retrieving on-chain data to run on the IBM quantum computer

Corona in a Box: CodeForCorona (Singapore) winner: 3rd place overall

May 2020

○ Coded a simulation game in Unity using C# to educate players on rates of disease transmission

Selected Awards and Achievements

Physics Brawl Online: Team Rank 2/1037

Nov 2022

International Physics Olympiad Gold Medallist: Rank 15/364

Jul 2019

Lee Kuan Yew Award for Mathematics and Science:

Aug 2018 & Aug 2020

Prestigious national awarded to awarded to top Mathematics and Science students in Singapore.

International Young Physicists' Tournament: Overall Champions

July 2016 – July 2018

Conducted research into 17 open-ended physics problems and presented the solutions to a distinguished international jury panel. Ranked first out of more than 30 countries for two consecutive years of participation.

Research and Publications

○ Properties of Viazovska Functions

Studying the structure and possible extended applications of Maryna Viazovska's magic function, used to solve the sphere packing problem in eight dimensions, under the guidance of Professor Henry Cohn.

○ GAILA - GPT-based AI Language Assistant

Developing a GPT-3 based prototype language learning assistant through prompt engineering, capable of providing personalized feedback to students' essays in written and audio form, under the guidance of Dr Takako Aikawa.

○ Dynamic trajectory and parametric resonance in coupled pendulum-beam system

Independently developed a numerical model of a complex physical system in Mathematica which achieved perfect agreement with experimental data. Published as Editor's Pick in monthly issue.

X. Fu, *Am. J. Phys.*, 2020, 88, 625. doi:10.1119/10.0001389.