

Manxi (Maggie) Shi

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Education

Massachusetts Institute of Technology, BS in Physics and EECS (May 2027)

Relevant Coursework: Quantum Physics I and II, Probability, Data Structures and Algorithms, Machine Learning, Deep Learning (G), Computation Structures, Fundamentals of Programming, C and Assembly

Membership: MIT IAFI (NSF AI Institute for Artificial Intelligence and Fundamental Interactions)

Work Experience

Software Engineer Intern: Amlogic Inc. (June 2024 – Aug 2024)

Optimize audio resampling algorithm written in C with ARM Neon intrinsics on embedded system. Gained proficiency in performance engineering: vectorizing SIMD code, optimizing compiler ability, and performance profiling with ARM Development Studio. Also gained experience with embedded systems, cross compiling, and signal processing.

Research

MIT Research Laboratory of Electronics, Prof. Soljacic (Sep 2024 – Present)

Create an "AI Scientist" with RAG LLMs to automate the research process in photonics, starting with novel idea generation.

MIT Research Laboratory of Electronics, Prof. Soljacic (Sep 2023 – Present)

Develop theoretical models for and test with simulations on computing cluster 3D photonic crystal designs to confine light in nanocavities without use of a photonic bandgap. Gained knowledge of group theory, supercomputing clusters, Scheme, Linux, and SLURM. Paper in progress.

Computational Fluid Dynamics (Jan 2023 – May 2023)

Created Python simulation of the [Lattice Boltzmann Method](#) to model fluid flow around a cylinder in a walled channel. Gained experience with computational physics modeling in Python.

Projects

Yale Summer Program in Astrophysics (June 2022 – Aug 2022)

Programmed in Python asteroid orbit simulation (Monte Carlo genetic algorithm, Method of Laplace, Stormer-Verlet numerical integrator) with photometry data extracted from images taken at Yale's Leitner Observatory.

MIT Lincoln Laboratory Beaver Works Summer Institute: [Build a CubeSat](#) (July 2021 – Aug 2021)

In a team of 4: CAD designed, built, and programmed a prototype LEO CubeSat and Ground Station operated with Raspberry Pis. Gained experience with Linux and systems engineering.

MIT Lincoln Laboratory Beaver Works Summer Institute: [piPACT Project](#) (June 2020 – July 2020)

Private automated contact tracing (PACT) with Raspberry Pi's for COVID-19. Analyzed BLE RSSI signals and classified proximity/obstruction with supervised model. Gained experience with Sci-kit Learn, Pandas, and Linux.

Awards

2022 US Physics Team Member, US Physics Olympiad (USAPhO) Gold Medalist (2022)

3x AIME Qualifier (2021/2022/2023)

Skills

General: Python, C, Java, RISC-V Assembly, ARM, Linux, Bash scripting, PyTorch, MATLAB, Bluespec

Math: Linear Algebra, Probability, Statistics, Differential Equations, Calculus