

## EDUCATION

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### Massachusetts Institute of Technology (MIT)

B.S. in Electrical Engineering and Computer Science

B.S. in Mechanical Engineering and Quantum Information and Computation

GPA: 4.85/5.0

Graduating May 2022

## SKILLS

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### Hardware & Circuits

FPGA Design, Hardware Simulation, PCB Design, Processor Design, Nanoelectronics, Embedded Systems, Signal Processing, Electromagnetism, Solid State Circuits, SPICE Simulation

### Software

Computational Photography, Computer Vision, Controls, Machine Learning, Security Research, Web Design

### Physics

Circuit QED, Quantum Simulation, Optics, Superconductivity, Semiconductor Physics, Quantum Systems Control, Quantum Measurement, Nanophotonics

### Mathematics

Linear Algebra, Group Theory, Complexity Theory, Information Theory, Calculus, Probability, Differential Equations

### Mechanical Skills

Mill, Lathe, 3D printing, Robotics, Thermodynamics, Fluid Dynamics

### Languages

**Software:** C, C++, Python, Swift, JavaScript, Ruby, Julia, Kotlin, MATLAB, Java, Objective-C, PHP, bash

**Hardware:** BlueSpec, Verilog, SystemVerilog

## EXPERIENCE

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### • MIT Quantum Photonics Group (QPG)

Undergraduate Researcher

February 2022 - Now

Implementing fast GPU quantum stabilizer formalism simulations for a Julia quantum simulation package *QuantumClifford.jl*

### • MIT Quantum Photonics Group (QPG)

Undergraduate Researcher

Sept. 2020 - October 2021

Built software using tensorflow in Python that generates optimal microwave control pulses for diamond-based quantum computers with a web tool to view simulation results. Developed models to simulate arbitrary arrangements of color centers and waveguides. Implemented optimal control theory techniques to find time-varying pulses that, along with other methods, increase the number of qubits we can control on a diamond-based quantum computer by 3 orders of magnitude.

### • MIT Quantum Nanostructures and Nanofabrication (QNN)

Undergraduate Researcher

May 2021 - Now

Developed mathematical methods and implemented an electro-thermal model in Python to efficiently simulate superconducting wires and superconducting nanowire single photon detector (SNSPDs).

### • MIT ESI Rapid Response Group (RRG)

Web Designer

June - Aug. 2020

Designed the new logo and website for MIT's Environmental Solutions Initiative new initiative RRG. Link to website: [rrg.mit.edu](http://rrg.mit.edu)

## PROJECTS

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### • FPGA Depth Estimation using a Camera Array

Programmed an FPGA to estimate depth information from two camera feeds.

January 2022 — Link to github page.

### • Eclipse - glasses that modulate epileptic triggers

Developed and launched an alpha prototype with a team of product designers. I worked on sensing and modulation, user interaction, designing and performing EEG trials, coding in Microchip Studio and choosing PCB components.

Sept. - Dec. 2021 — Link to product brochure

### • Non-Photorealistic Renderer

Developed a C++ project that processes images and converts them into detailed multi-layered paintings with the ability to interpolate and incorporate design styles from a reference image.

May 2020 — Link to github page.

### • Computer Vision and LIDAR Based Obstacle Avoidance

Programmed a self-driving car using ROS to race on a track while avoiding obstacles for MIT's Robotics Systems and Science. Used image segmentation and classification to build the navigation space and path-find around obstacles. Implemented SLAM on LIDAR data with a team to assist navigation.

Feb. - May 2020