# Xin Hung Chan

413-430-9862 | xchan@umass.edu | LinkedIn | GitHub | Portfolio

Citizen of Singapore; eligible for H-1B1 visa

## Education

**University of Massachusetts Amherst** — Amherst, MA

*Computer Engineering (BS), Mathematics (BS)* — *Sept. 2023 – May 2027*

- **GPA: 3.9/4.0**
- **Dean's List**: Fall 2023 – Present
- **Computer Engineering Coursework**: Data Structures, Security Engineering, Computer Networks, Embedded Systems, Signal Processing, Artificial Intelligence, VLSI, Systems Programming, Hardware Design for Machine Learning
- **Mathematics Coursework**: Multivariate Calculus, Linear Algebra (Graduate), Discrete Math, Statistics I, Mathematical Modeling

## Experience

**UMass CubeSat** — Aug 2024 – Present

*Onboard Processing Team* — *Amherst, MA*

- Collaborated with a team of 30 graduate and undergraduate students to develop a small satellite of $10cm^3$ with 312 spectral bands, designed for space launch through NASA.
- Developed a CNN model for real-time processing of hyperspectral data, fine tuned for identifying signatures of rare earth elements.
- Working on the hardware acceleration of **quantized neural networks** on FPGA, implementing custom layers and optimizing performance using the FINN framework.

**Computer Vision Engineer** — Sept 2025 – Present

*Lunabotics Team, University of Massachusetts Amherst* — *Amherst, MA*

- Contributed to the development of a robotic mining system for NASA's Lunabotics Competition, focused on designing computer vision algorithms and communication protocols.
- Integrated vision with autonomous navigation, used sensor fusion techniques to combine camera input with LIDAR and IMU data, allowing the robot to interpret its environment.

**Undergraduate Teaching Assistant** — Sept 2025 – Dec 2025

*University of Massachusetts, College of Engineering* — *Amherst, MA*

- Held office hours for students in ECE 201 (Analytical Tools for ECE) with complex numbers, linear algebra, and differential equations.
- Assisted students in ECE 202 (Computational Tools for ECE) with MATLAB, Excel, and Python.

## Projects

**LC-3 Virtual Machine** | *C, Assembly, Systems Programming* — June 2025 – July 2025

- Implemented a virtual machine for the **LC-3 architecture** from scratch in **C**, including instruction decoding, memory management, register simulation, and I/O trap handling.
- Built an **interactive debugger** with support for step execution, breakpoints, and real-time memory inspection
- Developed a **custom assembler** to convert LC-3 assembly code into executable machine code.

**Network Traffic Anomaly Detection** | *Python, Machine Learning, Networks* — Aug 2024 – July 2025

- Developed and compared **supervised** and **unsupervised models** to detect anomalies in network traffic using the CICIDS2017 dataset
- Achieved **96.7%** AUC with XGBoost through feature engineering and time-series analysis.
- Visualized model performance using ROC curves, confusion matrices, and **t-SNE clustering**.

**Monte Carlo Option Pricing on FPGA** | *Finance, Verilog, Hardware Acceleration* — July 2025 – Aug 2025

- Implemented a Monte Carlo simulation for European option pricing using **Geometric Brownian Motion** in **SystemVerilog** on a Xilinx Spartan-7 FPGA.
- Meshed principles of **stochastic modeling**, pipelining, and **parallel programming** to optimize random number generation and maximize throughput.

## Technical Skills

**Languages**: Java, Python, C/C++, PostgreSQL, JavaScript, HTML/CSS, MATLAB
**Frameworks**: React.js, Node.js, MongoDB, Git, Excel, CUDA, AWS, PyTorch, FastAPI, Valgrind
**Hardware**: FPGA Design, ARM Assembly, SystemVerilog, Linux, HSPICE, Cadence Virtuoso