Andrew Li

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EDUCATION

Massachusetts Institute of Technology (MIT)

MEng in Electrical Engineering and Computer Science **Jan 2025 – Jan 2026**

BS in Electrical Engineering and Computer Science (4.9/5.0) **2021 – 2025**

- Digital System Design (FPGAs), High-Frequency Integrated Circuits, Performance Engineering (C/x86), Distributed Systems, Operating Systems, Data Structures & Algorithms, Computer Architecture

EXPERIENCE

Undergraduate Researcher, MIT CSAIL **Jun 2024 – Aug 2024**

- Implemented novel scheduling algorithm for multi-tenant LLM training jobs with NVIDIA's CUPTI C++ API
- Setup 24-node containerized HPC GPU cluster with RoCE/InfiniBand for experiments
- Sped up GPT-3 training 6x with GPU profiling, PyTorch source debugging, network optimizations
- Established industry partners to scale to thousands of GPUs in future work

Undergraduate Researcher, MIT CSAIL **Feb 2024 – Jun 2024**

- Implemented quantized stochastic gradient descent on photonic FPGA neural net accelerator
- Setup custom PetaLinux build, DDR4 and CMAC (100Gbps) IP cores on Xilinx Zynq UltraScale+ RFSoC
- Documented development setup and hardware design for undocumented parts of the project

Software Engineer Intern, Expensify, Inc. – New York, NY **Jun 2023 – Dec 2023**

- Sped up SQL queries in critical login API command from over a second to <50ms
- Optimized new expensive hashing compliance requirements with 50% reduction in API timings
- Implemented mobile receipt upload and scan feature for a conference with 1-month turnaround
- Reviewed pull requests and wrote design specifications for new features

Software Engineer Intern, Palo Alto Networks – Santa Clara, CA **May 2022 – Aug 2022**

- Created customer data access control system for support team with LDAP and Python scripts
- Integrated new roles, permissions, scopes into existing SAML and cloud infrastructure

PROJECTS

Voxos

- Designed and verified FPGA-based vocoder instrument with hi-fi audio synthesis and external MIDI
- Implemented custom audio signal processing pipeline without IP capable of 24-bit, 48kHz
- Implemented USB2.0 host controller and audio I/O drivers (SPI, I2S, UART) from datasheets
- Learned audio processing techniques and MATLAB for filter design in 1 month

Fenix

- Developed RTOS for STM32 Cortex-M7 chip to learn bare-metal systems and freestanding C
- Wrote ethernet driver, network stack with ARP, ICMP, TCP support without HAL through datasheet

RaftKV

- Implemented persistent key-value store backed by Raft distributed consensus algorithm in Go

WHS Scheduler

- Created iOS/Android app with >10,000 downloads for Westside High School students to track their day
- Maintained app and worked with school administration for 5 years

SKILLS

Languages	C, C++, x86/ARM Assembly, Verilog, Go, Python, JavaScript/TypeScript, PHP, MATLAB
Software	Kubernetes, Linux Kernel, GCC/GDB, Vivado, cocotb, AWS, React, Git, CMake, CUDA
Hobbies	Jazz saxophone, piano, drums, electric bass, cycling, hiking
Awards	MIT Emerson Jazz Fellow, MIT Philip Loew Award for Creative Accomplishment, National YoungArts Winner