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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)

M.S. CANDIDATE, MAY 2023

Electrical Engineering and Computer Science, 5.0/5.0 GPA

- Thesis work with the Parallel & Distributed Operating Systems group at MIT CSAIL focuses on security-focused formal verification of hardware-software systems (such as Hardware Security Modules) across multiple trust domains.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)

B.S., MAY 2022

Electrical Engineering and Computer Science w/ Minor in Urban Studies & Planning, 5.0/5.0 GPA

- Teaching experience includes Interconnected Embedded Systems (6.08), where I collaborated with instructors and other TAs to mentor project teams, create supplementary materials, and provide feedback and support on labs and exams.

EXPERIENCE

R2C - SOFTWARE ENGINEERING INTERN, SEMGREP APP

JUNE-AUG. 2022

- Implemented changes in **TypeScript** and **React** to streamline first-time signups for R2C's security scanning service.
- Explored the full tech stack, from **Kubernetes** and CI/CD to **SSO Authentication** and third-party integrations.
- Analyzed usage data to determine UI pain points and rapidly shipped data-based improvements to remove them.

APPLE, INC. - CELLULAR FIRMWARE ENGINEERING INTERN

JUNE-AUG. 2021

- Prototyped **Python & C** software and hardware test framework to improve interdepartmental integration testing.
- Implemented proof-of-concept that removed maintenance and infrastructure overhead of previous test frameworks.
- Communicated with and presented to senior management and other teams to scope, plan, and share results.
- Published extensive documentation internally and held training sessions to transition development to full-time engineers.

THE MIT TECH - TECHNOLOGY DIRECTOR & WEBMASTER

JAN.-DEC. 2021

- Organized and led department meetings, developing internal and external websites for MIT's largest student newspaper.
- Removed dependencies on aging physical servers to begin the transition to **AWS EC2 and S3**, simplifying maintenance.

KEOLIS COMMUTER SERVICES - FULL STACK ENGINEERING INTERN

JUNE-AUG. 2020

- Designed and implemented an online data analysis platform in **React** to reduce delays for commuter rail locomotives
- Decoded & reliably transmitted data streams (10 packets/second) from locomotives using multithreaded **Python** code

PROJECTS

OPTIMIZING COMPILER (MIT 6.035 - COMPUTER LANGUAGE ENG.)

MARCH-MAY 2022

- In a team of 3, designed and implemented in **Rust** a compiler for a simple C-like language targeting the **x86-64** ISA.
- Personal contributions included a web-based graph-coloring register allocator, implementing and using several dataflow analyses in order to select allocation units and find conflicts. Ranked second-fastest in the MIT 6.035 compiler derby.

HARDWARE PASSWORD MANAGER (MIT 6.111 - MICROCOMPUTER PROJ. LAB.)

MAY 2020

- Independently planned and prototyped a hardware password manager including USB keyboard emulation for portability.
- Designed a comprehensive encryption scheme and intuitive user interface; implemented TOTP 2FA code generation.

LEADERSHIP

- **The Tech**: Technology Director/Webmaster, Sports Editor, and Staff Photographer for MIT's student newspaper
- **Global Teaching Labs, Ancona, IT**: developed & taught course materials in physics, math, and computer science
- **Gordon-MIT Engineering Leadership Program**: Improved communication, leadership, and teamwork skills

SKILLS & INTERESTS

- **Technologies**: Python, TypeScript, React, C, Rust, Verilog, Racket, Git, Linux
- **Infrastructure**: AWS (S3, Lambda, EC2, SES), Docker Compose, Github Actions
- **Impact Areas**: Software Security, Environment, Transportation, Journalism
- **Personal**: Hiking & Backpacking, Downhill & XC Skiing, Running, Photography