

Jonathan Carlson

☎ (+1) 707-782-2226 ✉ jonathanbcarlson@gmail.com 📷 jonathanbcarlson 🌐 jonathanbcarlson

EDUCATION

University of California, Los Angeles

Cumulative GPA: **3.7** / 4.0

M.S IN COMPUTER SCIENCE

Sep. 2023 - June. 2024

- Coursework: Secure Computer Architecture (Meltdown, Spectre), Advanced Computer Architecture (ILP, caching).

University of California, Los Angeles

Cumulative GPA: **3.6** / 4.0

B.S. IN COMPUTER SCIENCE

Sep. 2019 - June. 2023

- Coursework: Operating Systems, Networking, Security, Programming Languages, Compilers, Neural Networks
- Dean's Honors List in Winter 2020/21/23, Spring 2022

EXPERIENCE

Ciena

Petaluma, California

EMBEDDED SOFTWARE ENGINEER

July 2024 - Present

- Increased software upgrade speed (up to 2x) through batching and improved device interoperability.
- Reduced spammy emails when an automated Jenkins build or test breaks by creating a Teams webhook notification system to alert *only* the engineer who broke it.

Ciena

Petaluma, California

EMBEDDED SOFTWARE ENGINEERING INTERN

July 2023 - Sep. 2023

- Enabled improved memory safety of C based firmware by compiling `no_std` Rust (added support for heap allocation) for the ARC processor using `rustc_codegen_gcc`.
- Fixed undefined behavior in C by using static analysis tools (Coverity).
- Improved testing for internal tools to maintain backwards compatibility (after breaking it).

Tibit Communications (acquired by Ciena)

Petaluma, California

FIRMWARE ENGINEERING INTERN

June 2022 - Sep. 2022

- Implemented IEEE 802.1X Key derivation function (KDF) to generate keys necessary for MACsec (IEEE 802.1AE) Key Exchange (MKA).
- Improved internal tools to increase engineer productivity as well as adapted internal tools to be customer facing which simplified and extended configuration of Tibit's devices.
- Created a calibration model tester in Python to compare different calibration models which were used to optimize calibration times.

PROJECTS

Masters Capstone Project

Los Angeles, California

COMPUTER SCIENCE DEPARTMENT, UCLA

Sep. 2023 - July. 2024

- Created an automated resource leak fixer using large language models (LLMs) such as OpenAI's GPT-4o.
- Fixed 69.4% of leaks found by static analysis tools when evaluated on a Java dataset (NJR-1) of ~300 programs.
- For more information, read my capstone paper.

Micromouse (IEEE at UCLA Project)

Los Angeles, California

IEEE STUDENT BRANCH AT UCLA

Oct. 2020 - Mar. 2021

- Designed a PCB using EAGLE which detects walls using IR sensors and receivers and sends that data to an STM32 microcontroller.
- Designed a maze-solving algorithm that used flood fill to navigate any unknown maze.

SKILLS

Programming C, Python, C++, Rust, Java, JavaScript, Bash, Arduino

Technologies CMake, Jenkins, Git, PyTorch, React, Firebase, Typst

HONORS & AWARDS

Eagle Scout

Petaluma, California

BOY SCOUTS OF AMERICA, TROOP 9

January, 2017