

Samir Rashid

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Hardcore software engineer experienced in building observable, safe operating systems.

Education

University of California San Diego

San Diego, CA

M.S. IN CS | DOUBLE B.S. MATH AND COMPUTER SCIENCE, CLASSICAL STUDIES MINOR | GPA 3.9

Sept 2020 - June 2025

- **M.S. Computer Science** Wireless Embedded & Operating Systems TA, mentor FIRST Robotics team 812
- **Relevant Coursework:** Graduate-Level Operating Systems, Compilers, Virtualization, Networking, Cryptography, Algebra, Analysis

Publications

Thesis (in progress): **Formally Verified Timer Subsystem in Embedded OS**

Tabula Rasa: Starting Safe Stays Safe @ SPICES 2024 (***Best Paper**, second author)

Talk: **Provable Security in Embedded Systems: Verification Work in Tock OS** @ OSFC 2024 → SOSP 2025

Talk: **The case for Nix on the home server** @ ScaLE 2024 **6,000 views!**

Inferring Mental Burnout Discourse Across Reddit Communities @ NLP for Positive Impact 2024

Experience

Starlink

Sunnyvale, CA

SOFTWARE ENGINEER | DIRECT TO CELL CORE NETWORK

2025 - Current

Tock Operating System

San Diego, CA

RESEARCH SOFTWARE ENGINEER

June 2023 - Current

- **Formally verified** a Rust-based OS to prove memory isolation guarantee can never be violated
- Contributed to networking stack in **Rust** by adding syscalls and designing interfaces to securely run OpenThread on Tock

Viasat

Carlsbad, CA

SOFTWARE ENGINEERING INTERN

June - September 2023

- Ported **Linux drivers** to latest kernel for software router. Researched kernel changes to update deprecated function calls
- Did bringup of drivers on OpenWRT based OS and debugged issues across the OS and networking stack by using strace and gdb
- Maintain backwards compatibility of new OS by containerizing code with **LXC containers**

Twitter

Remote

QUALITY ENGINEERING INTERN

September - December 2021

- Designed fault tolerant integration with testing framework that catalogues automated test results for manual testers
- Used Java stream processing to aggregate test results in real time, enabling analytics on historical test results
- Spoke with key stakeholders to design a solution. Worked with multiple teams to ensure solution can be adopted company-wide

Projects

Triton Unmanned Aerial Systems

C++, Python

- Collaborated with team to design, build, and fly an unmanned aerial vehicle (UAV). **Placed 5th place internationally**
- Built a 3D real time dynamic path planning system using RRT*. Created model to detect and avoid unknown obstacles
- Developed robust testing framework to simulate and visualize generated paths

Binary Translator RISC-V to ARM

Rust, Assembly

- Statically translate arbitrary binaries from subset of the riscv64 to aarch64 ISA, supporting control flow and system calls

March 2025

IDE Profiler Visualizer

Python, Typescript

- Made VSCode extension which inserts novel performance profiling visualizations into IDE

November 2023

Snek Compiler

Rust, x86

- Created compiler in Rust from Python subset to x86 assembly with garbage collector and ptrace breakpoint debugger

June 2023

IP Networking Stack

C

- Implemented IPv4 compatible router in C that can send/receive/forward ARP, ICMP, and IP packets

April 2023

Deep Neural Networks from Scratch

NumPy, PyTorch

- Wrote IBM machine translation; deep neural network (MLP) **from scratch with no libraries** for CIFAR-10
- Used **PyTorch** to implement image captioner (LSTM+CNN) on CoCo; Fine tuned BERT for Alexa intent classification

September 2022

ACM Attendance Visualizer

React

- Created online dashboard for analyzing the organization's event attendance data using **D3, Express, React, PostgreSQL**

Sept-Dec 2020

Triton Schedule Scraper

Python, Tkinter, Selenium WebDriver

- Created native GUI for Python script that scrapes course schedule with WebDriver to create iCal file

October 2020

DIY projects

- Built: Homelab, smart eink water bottle, PCB for wearable, pinball machine, headphones, mechanical keyboard, FPV quadcopter, analog turntable, trackball (WIP)—design CAD and electronics for ergonomic mouse, air filter—3D printed and CAD for wildfire smoke
- Latin poetry reader (prosody)—Python script uses Text-to-Speech API and morphs audio to match dactylic hexameter rhythm
- Ancient Greek keyboard firmware mod—Custom QMK firmware that natively supports Ancient Greek and its accents

Skills

Languages C, C++, Rust, Python, Java, JavaScript, TypeScript, SystemVerilog, Bash, LaTeX, MATLAB, R, Nix, Haskell, Google Apps Script

Software PyTorch, React, SQL, AWS, Docker, NixOS, Linux, Unity, Onshape, Blender, KiCad, JUnit, Flask, pytest, Jest, GDB, cProfile