

Samir Rashid

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"Software engineer interested in building observable, safe operating systems."

Education

University of California San Diego

DOUBLE B.S. MATH AND COMPUTER SCIENCE, CLASSICAL STUDIES MINOR | GPA: 3.9

San Diego, CA

June 2024

- **M.S. Computer Science in progress (graduating Dec 2025).** Operating Systems TA, lead mentor FIRST Robotics team 812
- **Relevant Coursework:** Graduate-Level Operating Systems, Compilers, Networking, Cryptography, Algebra, Analysis

Experience

Tock Operating System 🔗

RESEARCH SOFTWARE ENGINEER

San Diego, CA

June 2023 - Current

- Working on **formally verifying** 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

SOFTWARE ENGINEERING INTERN

Carlsbad, CA

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

QUALITY ENGINEERING INTERN

Remote

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 make sure solution can be adopted company-wide.

Projects

Triton Unmanned Aerial Systems

PROGRAMMER

C++, Python

Dec 2020 - June 2024

- 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 unknown obstacles and avoid them.
- Created robust testing framework to simulate and visualize generated paths.

IDE Profiler Visualizer 🔗

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

Python, Typescript

November 2023

Snek Compiler

- Created compiler in Rust from Python subset to x86 assembly with a custom breakpoint debugger using ptrace.
- Supports IO, heap, garbage collection, comments, debug statements.

Rust, x86

June 2023

IP Networking Stack

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

C

Apr 2023

Deep Neural Networks from Scratch

- 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.

NumPy, PyTorch

Sept 2022

ACM Attendance Visualizer 🔗

FULLSTACK DEVELOPER

React

Sept-Dec 2020

- Developed online dashboard for analyzing the organization's event attendance data, using **D3, Express, React, and PostgreSQL**.
- Defined schema, implemented protected backend data processing routes, and documented APIs using Postman 🔗.

Triton Schedule Scraper 🔗

- Python script uses WebDriver and automatically scrapes UCSD course schedule to create an iCal file.
- Created native GUI for the program using Python and Tkinter.

Python, Tkinter, Selenium WebDriver

Oct 2020

DIY Projects

- Have built: pinball machine, headphones, mechanical keyboard, FPV quadcopter, home lab, analog turntable — using household parts, trackball (WIP) — design CAD and electronics for ergonomic mouse, air filter — 3D printed and CAEd to combat indoor 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.

Awards

Xerox Award for Innovation and Information Technology

2019

Skills

Language Python, Java, C, C++, Rust, JavaScript, TypeScript, SystemVerilog, Bash, L^AT_EX, MATLAB, R, Nix, Haskell, Google Apps Script
Software PyTorch, React, SQL, AWS, Docker, NixOS, Linux, Unity, Onshape, Blender, JUnit, Flask, pytest, Jest, GDB, ASP.NET, cProfile