Samir Rashid

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"Junior software engineer interested in building observable, safe operating systems."

Education

University of California San Diego *San Diego, CA*
DOUBLE B.S. MATH AND COMPUTER SCIENCE, CLASSICAL STUDIES MINOR | GPA: 3.93 *Expected Graduation: June 2024*
- **Relevant Coursework:** Graduate-Level Operating Systems (*in progress*), Real Analysis (*in progress*), Compilers, Networking, Cryptography

Experience

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**.

Computing for Social Good Lab at UCSD *San Diego, CA*
STUDENT RESEARCHER *August 2022 - May 2023*
- Researched social media discourse of mental burnout and problem gambling.
- Analyzed trends using **LDA topic analysis**, augmented data, and experimenting with team applying natural language processing techniques.
- Explored and applied SOTA machine learning techniques to deal with real world data constraints.

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 make sure solution can be adopted company-wide.

Projects

Triton Unmanned Aerial Systems *C++, Python*
PROGRAMMER *Dec 2020 - Current*
- Collaborating 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*. Training vision model for obstacle detection using **Blender** sim.
- Created robust testing framework to simulate and visualize generated paths.

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 a custom breakpoint debugger using ptrace. *June 2023*
- Supports IO, heap, garbage collection, comments, debug statements.

IP Networking Stack *C*
- Implemented IPv4 compatible router in C that can send/receive/forward ARP, ICMP, and IP packets. *Apr 2023*

Deep Neural Networks from Scratch *NumPy, PyTorch*
- Wrote IBM machine translation; deep neural network (MLP) **from scratch with no libraries** for CIFAR-10. *Sept 2022*
- Used **PyTorch** to implement image captioner (LSTM+CNN) on CoCo; Fine tuned BERT for Alexa intent classification.

ACM Attendance Visualizer ⌂ *React*
FULLSTACK DEVELOPER *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, Tkinter, Selenium WebDriver*
- Python script uses WebDriver and automatically scrapes UCSD course schedule to create an iCal file. *Oct 2020*
- Created native GUI for the program using Python and Tkinter.

DIY Projects
- Have built: mechanical keyboard, FPV quadcopter, maintain a home (computer) lab, analog turntable — using household parts, trackball (WIP) — design CAD and electronics for ergonomic mouse, air filter — 3D printed and CADed 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, LaTeX, MATLAB, R, Nix, Haskell, Google Apps Script
Software PyTorch, React, SQL, AWS, Docker, Linux, Unity, Fusion 360, Blender, JUnit, Flask, pytest, Jest, GDB, ASP.NET, cProfile, Kubernetes