QISHEN (SAM) LIANG

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SUMMARY

With the skills listed below, I am applying for the **software Engineer / Network Engineer / Cybersecurity Analyst** position.

TECHNICAL SKILLS

- Languages: C++, C, Java, Python, SQL, P4 Language, MIPS Assembly, x86 Assembly, Bash, LaTeX, JavaScript
- Tools and Knowledge: Docker, k8s, Software Defined Networking, Selenium, Security Systems, OS (Unix, Linux), TCP/IP, Git
- Methodologies: Algorithms, Automations, Complexity Theory, Mininet, Multithreading, Data Collection, Data Analysis, Computer Architecture, OOP, Debugging, IT Support, AI/ML, Troubleshooting, Agile Standards, Research

PROFESSIONAL EXPERIENCE

The Merge Testbed Platform Security Analysis — Information Sciences Institute's STEEL Lab
Security Researcher — March 2024-May 2024

- Identified and addressed **1 major security issue** (root access) and over **3 vulnerabilities** in the Merge Testbed Platform, coordinated with the SPHERE Dev Ops, and mitigated potential risks of unauthorized access and system compromise
- lowered the attack surface by more than **20%**, by Conducting a comprehensive analysis and producing a detailed security report outlining identified concerns, vulnerabilities, user privileges, simulated attack scenarios, and patching suggestions

WebRTC Collection and Analysis Suite Based on NetUnicorn — UCSB Systems and Networking Lab
Undergraduate Researcher — October 2022-July 2023

- Designed and constructed a **state-of-the-art** Google Account automated login solution using **Python** and **Selenium** to bypass bot detection to auto-join online conferences
- Revamped the WebRTC data collection pipeline into NetUnicorn using Docker, enhancing deployment speed by **60%** and scalability to **double the user load** seamlessly
- Managed headless ARM64 OS on Raspberry Pi for data collections, achieving efficient data aggregation of **7 TB** across **30 nodes** simultaneously

QoE Estimation for WebRTC Video Conferencing Applications — UCSB Systems and Networking Lab
Undergraduate Researcher — September 2021-June 2022

- Programmed an automation software based on **Python** and **Selenium**, end-to-end initiation, participation, presentation, and termination of video conferencing sessions, incorporating **ffmpeg** and v4l2loopback kernel module
- Integrated and deployed a WebRTC QoS and QoE data collection pipeline to UCSB's PINOT, allowing simultaneous curation of dataset on more than **10 programmable end-hosts**
- Correlated over **10 key indicators** with protocol documentation, reviewing **1000+ pages** of WebRTC documentations, backing the analysis with RFC standards, with the help of **NumPy**, **pandas**, **SQLite**, and **Matplotlib**
- Curated more than **50 GB** of data for analysis and helped formulate the research paper

ACADEMIC PROJECTS

KOS - R3000 based Operating System Development — UC Santa Barbara
Team Leader & Developer — September 2022-December 2022

- Spearheaded a 2-person team to engineer a Linux-like Operating System for the R3000 CPU using **C language** in **10 weeks**, ensuring stable, crash-free operation and support for all Linux commands with concurrent execution of **8** programs
- Engineered the capability of running programs parallelly in kernel and inter-process communication, through pipes, PID tracking, signals, semaphores, race condition handling, and dynamic memory management
- Created 30+ files and 6000+ lines of codes for system development, including debugging, updates, comments, and documents

EDUCATION

University of Southern California — Los Angeles, CA
Master of Science in **Computer Science** — **GPA: 3.75** — August 2023-May 2025

University of California, Santa Barbara — Santa Barbara, CA
Bachelor of Science in **Computer Science** — **GPA: 3.96** — August 2019-June 2023
Bachelor of Arts in **Asian American Studies** — **GPA: 3.93** — August 2019-June 2023

HONORS & CERTIFICATES

Google IT Support Professional Certificate
UCSB Asian American Studies Distinction in the Major
UCSB College of Engineering High Honors
UCSB College of Letters and Science Highest Honors