TONY LIU

213-245-3558 • yliu6359@usc.edu • linkedin.com/in/yu-chen-liu-tony • https://github.com/tony2037

TECHNICAL SKILLS

Programming Languages: C/C++, **Python**, Java, Golang, JavaScript, C#
Operating Systems: Linux (Kernel Programming), **FreeRTOS**
Tools and Technologies: Git, Docker, **QEMU**, eBPF, Perf, AWS

EDUCATION

M.S, Computer Science Graduating May 2025
University of Southern California, Los Angeles, CA
Viterbi, Thomas Lord Department of Computer Science
Relevant coursework: Analysis of Algorithms

EXPERIENCE

Amazon.com LLC, Taipei, Taiwan: Nov 2021 - Jan 2023
Software Development Engineer (SDE): **Embedded Systems**, **RTOS**, Containerization, DevOps, Leadership

- Designed a "RISC-V Crash Capture and **Fault-Tolerant System**" to automate troubleshooting and repairs, reducing the debugging time by **80%** and capturing and handling all crash types with **100%** efficiency
- Designed and developed automated product error reporting system, and corresponding containerized deployment package, achieving a **100%** automatic snapshot generation and cloud upload upon product crashes
- Organized meetings to advocate the adoption of the new development debugging process with 5 different teams spanning 3 countries, resulting in full adoption of the system across all teams

Synology LLC, Taipei, Taiwan: Aug 2020 - Aug 2021
Software Development Engineer (SDE): **Linux Kernel**, Networking, Performance engineering

- Enhanced the read-throughput of RAID5 in the Linux kernel by **30%** through modifications to the reading behaviors, optimizing data retrieval and access
- Developed network performance analysis module using Linux Netfilter and Perf; Devised server packet-dropping strategies based on analysis, enhancing performance by **5%** at critical junctures
- Saved **90%** of development time by utilizing reverse engineering techniques to reverse, analyze, and reorganize binary code, improving the software development process

National Taiwan University, Taipei, Taiwan: Jan 2023 - July 2023
Researcher: **Linux Kernel**, **ARM**, Security, Scrum, Cooperation

- Developed an ELF loader to fetch DWARF sections to perform unwinding. Optimized the algorithm to reduce the run-time overhead by **90%**
- Developed an unwinding algorithm to unwind the call stack and perform control-flow integrity verification. Reduce the attack surface by **50%**
- Led a team of 2 graduate students to implement Scrum, optimize DevOps and achieve a **60%** reduction in development time

PROJECTS

Remote Chip Debugging Tool: **RISC-V**, **Python**, Raspberry Pi, JTAG, GDB May 2022

- Designed and implemented a remote debugging tool leveraging a Raspberry Pi and JTAG standard for MCU
- Automated devices testing process. Enabled several teams to work remotely
- Employed Python to create an intuitive service, resulting in **30%** reduction in overall debug and test cycles

Remote-controlled Aircraft: **Microcontroller Programming**, **C**, **Arduino**, Java, Android, GUI, UX June 2018

- Implemented the PID controller algorithm using **C** and **Arduino**, significantly elevating flight stability by **5%**
- Developed an Android mobile app in Java, empowering users with precise control over the movements, optimizing user experience and interaction
- Won the second place in the Hong Kong City University Aircraft Competition