YU-CHUNG CHENG

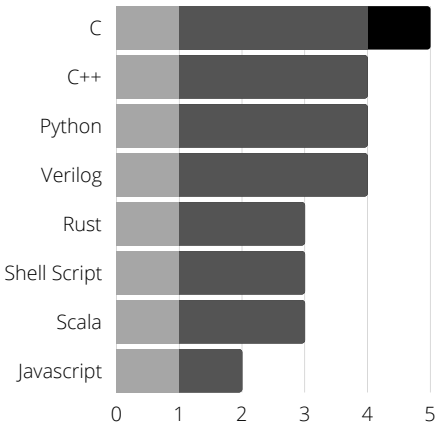
SR. SOFTWARE ENGINNER

Mobile: +886 955-547-401
sunnyanthonycheng@gmail.com
https://github.com/sunnyanthony

PROFILE

A senior level Software Engineer with 4+ years of work experience on IOT protocols, OS Kernel, system development and DevOps. Skilled in designing, writing, and developing system infrastructures and network solution. Looking for cloud/embedded system/ Linux kernel related opportunities to apply my technology skills. Holds a Master Degree in Computer Science.

PROGRAMMING LANGUAGES



SKILLS

- IOT protocols
  - COAP, LwM2M, MQTT etc.
- Security (TLS/DTLS)
- Linux and Network Programming
- Linux and RTOS Kernel Development
- Multi-task Computing
- Tool Chain Development
- Git and Svn
- DevOps (Jenkins and GitLab)
- CUDA Programming
- Docker
- SDN

WORK EXPERIENCE

Senior Software Engineer

RealTek Inc. 2020 Sep. - Present

NB-IOT SDK | 2020 - Present

- **System Infrastructures**
  - Design an ***efficient tiny data system*** that backups and restores data in sleep management and guaranteeing data completeness.
  - Implement a port of sleep management in RealTek's ***boot-loader*** to manage the backup-memory.
  - Enhance FreeRTOS to support sleep mode.
- **Tools**
  - Implement a ***hard-code tool*** that reads yaml configuration and generates a bin file to be the base of calibration setting.
  - Develop a ***CI tool*** to control Jenkins with remote APIs to trigger CI procedures.
- **Network Protocols and System SDK**
  - Enhance ***LwIP Network stack*** to support sleep mode to save power while no connection in.
  - Enhance the protocol between the iperf2 of Cellular Callbox and the ***lightweight Iperf2.***
  - Co-implement and applying RealTek's ***sleep management framework APIs.***

Software Engineer

RealTek Inc. 2017 Apr. - 2020 Sep.

NB-IOT SDK | 2018 - 2020

- **System Infrastructures**
  - Ported ***FreeRTOS*** and CMSIS_OS to the OS portable layer for a new MCU/DSP.
  - Co-designed a ***multi-core message-based communication framework*** for making tasks to transmit messages between different OSs.
  - Implemented a new feature of RealTek's ***boot-loader*** to boot multiple OSs on each CPUs.
  - Improved the ***system security*** by TrustZone partition.
- **Tools**
  - Implemented a post-linker tool that combined a secure ELF (TrustZone) and a non-secure ELF.

EDUCATION HIGHLIGHTS

National Tsing Hua University
Taiwan
Computer Science | Master Degree

- Research in OpenFlow hardware accelerator
  - https://tinyurl.com/y6rmemfe
- Courses:
  - Parallel programming
  - Introduction to Algorithms
  - Virtualization and Virtual Machines
  - Advanced Computer Architecture

CERTIFICATES

- Coursera
  - Machine Learning
  - Artificial Intelligence - Search & Logic
  - Cryptography I
  - Functional Programming Principles in Scala

ADDITIONAL

- https://medium.com/@sunnyanthonycheng
- https://hackmd.io/@BUfe3wJ9SPWtAsmrRE7P8A
- https://sunnyanthony.github.io

  - Designed **an efficient multi-image placement algorithm** that reduced flash fragmented memory in RealTek's post-linker tool.
  - Implemented experimental MIScheduler and .td file in the ***LLVM*** to utilize more Units (not adopted).
  - Setup ***Jenkins*** CI with ***Gitlab*** to build every commit.
- **Network Protocols and System SDK**
  - Improved ***Wakaama*** open source and re-designing its ***DTLS***, datagram TLS, and connection layer with MbedTLS.
  - Enhanced ***MbedTLS*** on RealTek's hardware accelerator in order to speed up the encrypt, decrypt and hash calculation.
  - implemented and improved **network stack** and tool like **Ping** (ipv4 and ipv6), **Iperf2**, **Cellular Interface** in LwIP, ADP layer in LTE stack, **UDP and IP layer** in LwIP and **socket** APIs.
  - Implemented a AT agent framework to control modem system and assign network information to RealTek's netwoek interface.
- **Demo**
  - Modified a bootstrap dashboard website to present and query our lwm2m dynamic.
  - Configured Nginx with fcgi to response POST request between front-end and back-end (lwm2m server).
  - Used Postgres to store sample data from IOT device and access by lwm2m server.

LTE UE system | 2017 - 2018

- **Linux Kernel and RTOS infrastructures**
  - Implemented remote processor message (***RPMsg***) virtual device that gained a memory zero-copy between two processors.
  - Re-wrote and improved ***VirtIO console device.***
  - Maintained ***VirtIO net device.***
  - Co-worked in VirtIO, ***vring*** and ***rproc*** framework.
  - Co-Modified QEMU to emulate our system
- **Applications**
  - Implemented a ***log daemon*** of modem and get log from rproc device for log tracing.
  - Implemented a ***RPmsg APIs Library*** for user to send messages to remote processor.

TEACHING ASSISTANT

National Tsing Hua University 2015 - 2016

- Programming Top 10 Important Algorithms in Python
- Digital Logic Design