鄭聖文 Sheng-Wen (Colin) Cheng

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Employment

NVIDIA Taipei, Taiwan
System Software Engineer Feb. 2024 - Now
- Develop secure bootloader software of Tegra SoCs as part of the Platform Security Controller (PSC) team
- Implement security features such as measured boot, image authentication, encryption, and decryption

GallopWave Taipei, Taiwan
Sensor Fusion Engineer Sept. 2023 - Feb. 2024
- ADAS algorithm (advanced driver-assistance system) validation

Avilon Intelligence Tainan, Taiwan
Embedded System Engineer Sept. 2018 - Mar. 2021
- Designed ARM Cortex-A72-based UAV onboard computer, including PCB layout and system bring-up
- Integrated 4G LTE System-on-Module (SoM) into UAV platform
- Developed vision-based tag detection algorithms for autonomous landing

Education

National Taiwan University (NTU) Taipei, Taiwan
Ph.D. Student (Incomplete), Electrical Engineering Sept. 2022 - May 2024
- Transitioned to industry to gain professional experience while remaining involved in academic activities
- Presented at the **Embedded Open Source Summit (EOSS) 2024**, hosted by the **Linux Foundation**

National Yang Ming Chiao Tung University (NYCU) Hsinchu, Taiwan
M.Sc. Eng., Graduate Degree Program of Robotics Sept. 2019 - Nov. 2021
Master Thesis: "Design of Indoor-Outdoor Smooth Transferable Unmanned Aerial Vehicle"
- Participated in academic collaborative research with **Taiwan Space Agency (TASA)**

Providence University (PU) Taichung, Taiwan
B.Eng., Computer Science and Information Engineering Sept. 2015 - June 2019
- First prize in the graduation project competition held by the College of Computing and Informatics

Certifications

MITx MicroMasters Program in Statistics and Data Science Online (edX)
Certificate Program by the **Massachusetts Institute of Technology** Jan. 2024 – Nov. 2025 expected
- Completed graduate-level courses in ***Probability***, ***Statistics***, ***Machine Learning***, and ***Time Series Analysis***.
- Completed all coursework; Capstone Exam (final requirement) pending.

Open-Source Projects

- **Tenok:** A Linux-like real-time operating system for Robotics and the Internet of Things (IoT) [GitHub]
  - A POSIX compliant RTOS targeting **ARM Cortex-M**
  - Features: pthread, mutex, semaphore, pipe, message queue, signals, SLAB, SoftIRQ, printk, etc.
- **NCRL flight control:** A Quadrotor flight control software based on FreeRTOS [Video]
  - Leading developer of the overall system including navigation, control, system integration, etc.
  - Licensed to the **Taiwan Space Agency (TASA)** for scientific research
- **Semu:** A minimalist RISC-V system emulator capable of running Linux kernel [GitHub]
  - Contributed to hardware emulation of GPU and block device with ***VirtIO*** and ***SDL***

Publications

- **S.-W. Cheng** and T.-H. Cheng, "Data-Driven Estimation of Quadrotor Motor Efficiency via Residual

Minimization," manuscript in preparation.

- **S.-W. Cheng** and Y.-H. Huang, "A Computationally Efficient GNSS/INS Design of Multirotor based on Error-state Kalman Filter," *2023 62nd Annual Conference of the Society of Instrument and Control Engineers of Japan (SICE)*, Tsu, Japan, 2023. [Link]
- **S.-W. Cheng** and H.-A. Hung, "Robust State-Feedback H∞ Control of Quadrotor," *2022 International Automatic Control Conference (CACS)*, Kaohsiung, Taiwan, 2022. [Link]
- S.-W. Wang, **S.-W. Cheng**, and C.-C. Huang, "Puyuma: Linux-based RTOS Experimental Platform for Constructing Self-Driving Miniature Vehicles," *Science and Information Conference (SAI)*, London, United Kingdom, 2018. [Link]

Presentations

- C.-C. Huang and **S.-W. Cheng**, "Crafting a Vision-Aided Software Stack for UAV," *Embedded Open Source Summit (EOSS 2024, **Linux Foundation Event**)*, Seattle, USA, 2024. [Link] [PDF]
- **S.-W. Cheng**, "Trends in Machine Learning for Unmanned Aerial Vehicle Applications," *Mobile Open Platform (MOPCON 2024),* **Keynote speaker**, Taiwan, 2024. [Link] [PDF]
- **S.-W. Cheng**, "Creating a Linux-like Real-Time Operating System for Quadrotor Drones," *Conference for Open Source Coders, Users, and Promoters (COSCUP 2024),* Taiwan, 2024. [Link] [PDF]
- **S.-W. Cheng**, "Tenok: Build a real-time operating system for Robotics," *Conference for Open Source Coders, Users, and Promoters (COSCUP 2023),* Taiwan, 2023. [Link] [PDF]

Invited Talks

- PEGATRON Corporation: "Trends and lessons learned in deep learning and generative AI applications for UAV," Taipei, Taiwan, 2024.