

# 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 in Electrical Engineering (Withdraw)

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. in 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. in Computer Science and Information Engineering

Sept. 2015 - June 2019

- First prize in the graduation project competition held by the College of Computing and Informatics

## Advanced Academic Coursework

### 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 *VirIO* 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  $H_\infty$  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. [\[Link\]](#)

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### Academic Service

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- Invited Reviewer for the **2026 American Control Conference (ACC 2026)**

### Presentations

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- 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

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