

鄭聖文 Sheng-Wen (Colin) Cheng

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Employment

NVIDIA System Software Engineer	Feb. 2024 - Present Taipei, Taiwan
GallopWave Sensor Fusion Engineer	Sept. 2023 - Feb. 2024 Taipei, Taiwan
Avilon Intelligence Embedded System Engineer	Sept. 2018 - Mar. 2021 Tainan, Taiwan

Education

The University of Texas at Austin M.S. in Computer Science	Aug. 2025 - Dec. 2026 Texas, USA
National Taiwan University Ph.D. Student, Electrical Engineering	Sept. 2022 - May 2024 Taipei, Taiwan
National Yang Ming Chiao Tung University M.S. in Robotics	Sept. 2019 - Nov. 2021 Hsinchu, Taiwan
Providence University B.E. in Computer Science and Information Engineering	Sept. 2015 - June 2019 Taichung, Taiwan

Academic Service

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

Certificate

MITx MicroMasters Program in Statistics and Data Science Certificate Program by Massachusetts Institute of Technology [Letter of Accomplishment]	Jan. 2024 –Dec. 2025 edX
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Projects

NCRL Flight Control [\[Video\]](#)

- Leading developer of the holistic system to build an agile quadrotor with nonlinear control and state estimation
- Project licensed to the Taiwan Space Agency (TASA) for research on aggressive quadrotor maneuver control

Tenok: A Linux-like RTOS for Robotics and IoT [\[GitHub\]](#)

- Built a POSIX-compliant RTOS optimized for ARM Cortex-M, adopting Linux-inspired kernel designs for robotics
- Implemented Unix-style OS features including pthreads, mutexes, semaphores, pipes, message queues, and signals
- Added Linux-like kernel mechanisms such as kthreads, wait queues, SLAB, kfifo, tasklets, printk, etc.

PU-01: Twin-boom Fixed-wing UAV [\[Link\]](#)

- Determined aerodynamic parameters, performed airfoil selection, and conducted stability analysis using XFLR5
- Created 3D CAD models of the structural components and fabricated the complete airframe

Semu: Minimalist RISC-V System Emulator [\[GitHub\]](#)

- Contributed to VirtIO hardware virtualization of GPU, input devices, storage, and random number generator

Publications

- [1] **S.-W. Cheng** and T.-H. Cheng, “Data-Driven Estimation of Quadrotor Motor Efficiency via Residual Minimization,” under review, 2025. arXiv:2510.11388. [\[Link\]](#)
- [2] **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. [\[Link\]](#)
- [3] **S.-W. Cheng** and H.-A. Hung, “Robust State-Feedback H_∞ Control of Quadrotor,” *2022 International Automatic Control Conference (CACS)*, Kaohsiung, Taiwan, 2022. [\[Link\]](#)
- [4] 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

- [1] “Building a Quadrotor Simulator with Python - Modeling, Simulation, and Control,” Open Tech Conference (OpenTechConf 2025), Hong Kong, 2025. [\[Link\]](#) [\[PDF\]](#)
- [2] “Crafting a Vision-Aided Software Stack for UAV,” Embedded Open Source Summit (EOSS 2024, **Linux Foundation Event**), Seattle, USA, 2024. [\[Link\]](#) [\[PDF\]](#)
- [3] “Creating a Linux-like Real-Time Operating System for Quadrotor Drones,” Conference for Open Source Coders, Users, and Promoters (COSCUP 2024), Taiwan, 2024. [\[Link\]](#) [\[PDF\]](#)
- [4] “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

- [1] “Trends in Machine Learning for Unmanned Aerial Vehicle Applications,” Mobile Open Platform (MOPCON 2024), **Keynote speaker**, Taiwan, 2024. [\[Link\]](#) [\[PDF\]](#)
- [2] PEGATRON Corporation: “Trends and lessons learned in deep learning and generative AI applications for UAV,” Taipei, Taiwan, 2024.