Chih-Wei Tseng

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Education

National Yang Ming Chiao Tung University, Hsinchu, Taiwan **Feb. 2022 - Mar. 2024**
M.S. in Electrical and Control Engineering

- GPA: 4.14/4.30
- Thesis: A Remote Photoplethysmography Atrial Fibrillation Detection System on Edge Devices
- Advisor: Chair Prof. Bing-Fei Wu
- Led a National Science and Technology Council (NSTC)-funded project on imaging-based AF and arrhythmia detection.
- Research results published as feature article in IEEE Journal of Biomedical and Health Informatics (impact factor: 6.7) as first author.
- Developed mobile-deployable, contact-free AF detection system achieving 99% reduction in model size, parameters, and FLOPs, 50% latency reduction, and >90% accuracy under motion and lighting variations.
- Applied GANs and diffusion models for motion-artifact denoising in rPPG signals.

Tamkang University, New Taipei City, Taiwan **Sep. 2018 - Jan. 2022**
B.S. in Electrical and Computer Engineering

- Rank: 1/81; GPA: 3.97 / 4.00
- Thesis: A Poker Playing System Based on Deep Learning and Robotic Arms
- Advisor: Distinguished Prof. Ching-Chang Wong

Research Experience

FaceHeart Inc., Taipei, Taiwan **Aug. 2025 - Present**
Research Intern (Part-time)

- Conducted research on deep learning interpretability for imaging-to-rPPG models.
- Explored visualization and analysis methods to improve model transparency and reliability.

National Yang Ming Chiao Tung University, Hsinchu, Taiwan **Apr. 2024 - Present**
Research Assistant (Full-time)

- Developing generative models and classifiers to reconstruct ECG from PPG for multi-class arrhythmia detection.
- Leading three master's students on research on LLMs, generative AI, and autonomous driving.
- Building a interpretable mechanism of memory module in DL model for trajectory prediction, including rare-case synthesis (e.g. car accidents).

Tamkang University, New Taipei City, Taiwan **July 2020 - Feb. 2022**
Undergraduate Researcher

- Assisted senior-year student in building a data augmented system based on depth camera.
- Built YOLO-v4 based card recognition system achieving 98% accuracy.
- Developed a multi-agent reinforcement learning algorithm with a 70% game-winning rate.
- Integrated robotic arm control via a vision-based pose estimation interaction system.

Publication

C. -W. Tseng, B. -F. Wu* and Y. Sun, "A Real-Time Contact-Free Atrial Fibrillation Detection System for Mobile Devices," in *IEEE Journal of Biomedical and Health Informatics*, vol. 29, no. 1, pp. 17-29, Jan. 2025, doi: 10.1109/JBHI.2024.3422155 (feature article).

C.-W. Sun, **C.-W. Tseng**, B.-F. Wu,*"* CoSMIC: A Cognitively-Inspired System with Memory Interpretability and Consolidation in Autonomous Driving*"* under review at IEEE Transactions on Intelligent Transportation Systems, 2025. (Autonomous Grand Challenge 2025 – Innovation Award)

Teaching Experience

National Yang Ming Chiao Tung University, Hsinchu, Taiwan **July 2022 – June 2023**
Teaching Assistant

- Delivered tutorials, graded assignments, and guided students in control-related labs and projects.

Awards

Autonomous Grand Challenge 2025 (ICCV Phase) – Innovation Award **Oct. 2025**

- Received the Innovation Award among 19+ participating teams from both industry (including Nvidia, Bosch, Xiaomi) and academia.

IEEE Taipei Section Master's Thesis Award **Dec. 2024**

- Two master's theses selected from ECE master's theses from around Taiwan each year.

17$_{th}$ Topco Scientific Co., Ltd. (TSC) Thesis Award – Distinction **Nov. 2024**

- 11 theses selected from 1,023 graduate students across all disciplines in Taiwan.

Presidential Award for Academic Excellence – Master's Studies **Feb. 2023**

Presidential Award for Academic Excellence – Undergraduate Studies * 5 **Sep. 2018 – Jan. 2022**

- Ranked in the top 1% of students in the class in a semester.

National Science and Technology Council Undergraduate Research Fellowship **July 2021 – Jane 2022**

- Awarded to exceptional research proposals submitted by undergraduates across Taiwan; acceptance rate less than 30%.

3rd Place, Undergraduate Thesis Innovation Award **Dec. 2021**

- Ranked 3rd place in undergraduate thesis competition among the department.

Posters & Technical Presentations

C.-W. Tseng, "Multi-Arrhythmia Detection from PPG-Reconstructed ECG," Poster presented at CACS 2025, Hsinchu, Taiwan, Nov. 2025.

C.-W. Tseng, "Light-weight Contact-Free AF Detection System," Poster presented at CACS 2024, Taoyuan, Taiwan, Oct. 2024.

C.-W. Tseng, "Dual Discriminator GAN for Motion-Robust AF Detection," CACS 2023, Penghu, Taiwan, Oct. 2023.

Outreach and Service

STEM Outreach Volunteer **July 2024**

- Organized STEM workshops to promote hands-on robotics education in underserved communities.

Skills

Computer:

- Python, C/C++, Java, Kotlin, MATLAB, Verilog, LATEX, SolidWorks, Android Studio, ROS.

Languages:

- English: advanced (IELTS Overall 7.0, Listening 7.5, Reading 7.5, Writing 6.0, Speaking 6.0)
- Mandarin: native
- Japanese: beginner (N4)