HUNG-CHIEH WU

✉ hungchieh@psu.edu

EDUCATION

The Pennsylvania State University — 2022 - Present
Ph.D. in Electrical Engineering (Advisor: Professor Donald Ebeigbe)
Current GPA: 3.78/4.0
Research Focus: Reinforcement Learning and Imitation Learning applications on quadruped robots
Passed the PhD Qualification Exam

National Chung Hsing University (NCHU), Taiwan — 2017 - 2021
B.S. in Bio-Industrial Mechatronics Engineering (BIME)
Junior/Senior GPA: 4.13/4.3; Rank: 1/53
Thesis: *Monitoring plant temperature in greenhouses by using RGB and thermal image integrating systems*

HIGHLIGHTED EXPERIENCE

Teaching Assistant, Linear Control System — Fall 2023 - Present
- Led lab sessions and assisted students with MATLAB and SIMULINK to learn linear control systems concepts.

Group Lead, Embedded Systems Software Team, RoboX (Mechnittany) — Fall 2024 - Present
- Designed and implemented embedded systems for the Robotmaster Competition 2025.
- Collaborated with computer vision and mechanical groups to integrate hardware and software components.

Research Assistant, Precision and Micro-Mechatronics Lab, NCHU — Mar. 2020 - July. 2022
Principal Investigator: Professor Yao-Chuan Tsai
Conducted AI-based computer vision research for agricultural environments, such as greenhouses and poultry houses.

- *Project: Wild bird automatic tracking and laser-driven repelling system based on AI*
  Developed an AI-driven bird-repelling system using the YOLO algorithm to prevent avian influenza.

- *Project: Development of greenhouse automatic vehicle integrated with RGB and thermal image modules*
  Designed an autonomous vehicle for real-time plant health monitoring to optimize greenhouse conditions.

(Projects funded by the Ministry of Science and Technology of Taiwan through industry-academia collaboration)

Team Lead, Agricultural Robotics Competition — 2019 - 2020
- Led a team to participate in two Agricultural Robotics Competitions in Taiwan, designing automated robots for irrigation, crop planting, and pot placement tasks.
- Coordinated a 4-member team, ensuring smooth operation of hardware and software systems, achieving second place in 2019 and third place in 2020 competitions.

COURSE PROJECTS EXPERIENCE

Model Predictive Control for Robot Locomotion
Conducted analysis and simulation of an MPC controller for a quadrupedal robot to optimize locomotion in Isaac-sim, ensuring smooth movements during reaching waypoints.

Kalman Filtering for Object Tracking
Developed a system for tracking geese using object detection techniques combined with Kalman filtering to enhance prediction accuracy and reduce noise in motion tracking.

Artificial Intelligence for Plant Classification
Implemented and compared the accuracy and efficiency of the YOLO object-detection algorithm for identifying various plant species, optimizing performance for agricultural applications.

PUBLICATION

1. **H.-C. Wu**, Z.-Y. Lei, P.-C. Huang, and Y.-C. Tsai. ”*Integrating system of RGB camera and thermal camera for monitoring the plant stress*” in *Conference on Bio-Mechatronics and Agricultural Machinery Engineering*, Chiayi City, Taiwan, Nov. 26-27, 2020.

2. Z.-Y. Lei, **H.-C. Wu**, C.-D. Chen, and Y.-C. Tsai, ”*Predicting plant stomatal conductance by machine learning method based on leaf temperature*” in *Conference on Bio-Mechatronics and Agricultural Machinery Engineering*, Taichung City, Taiwan, Oct. 17-18, 2019.

AWARD & SCHOLARSHIP

Scholarship
- Melvin P. Bloom Memorial Graduate Fellowship in Electrical Engineering, 2024
- BIME Alumni Association Scholarship, 2020 (for outstanding academic performance)

Academic Performance
- NCHU Golden Key Award, awarded to the top-performing student in the class (Ranked 1st in class)

Competition Performance
- Third place in Undergraduate Research Poster Competition, BIME Department, 2021 (engineered an RGB and thermal imaging system for plant temperature monitoring)
- Third place in the Agricultural Robots Competition, *Conference of Bio-Mechatronics and Agricultural Machinery Engineering*, 2020 (developed an autonomous robot for crop identification and irrigation)

SKILL

Programming: Python (Advanced; Gym, PyTorch, OpenCV), MATLAB (Intermediate), C++ (Basic; familiar with ROS development)

Robotics Software: Isaac-sim, IsaacLab, ROS (utilized for localization, navigation, and motion control)

Hardware and Platforms: Unitree Go1 (SDK-based locomotion control and motion planning), Jetson Nano/NX

Languages: Mandarin (Native), English (Fluent)