PEI YU CHANG

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SKILLS

- **Control Engineering**: Model Predictive Control (MPC), Control barrier function (CBF), cooperative control, Kalman Filter
- **Autonomous Systems**: Autonomous vehicles, Multi-agent system, Ground control stations for drones
- **Programming Language**: Python (CasADi, ROS2, Numpy, Scipy, Matplotlib), MATLAB/Simulink, C#, LabView, Data Distributed Services (DDS)
- **Software Engineering**: Linux, Git, Github, Applied Intuition

EDUCATION

The Ohio State University (OSU) Columbus, OH
Ph.D. Mechanical Engineering | GPA: 3.9/4 Jan. 2027 (Est.)

- Research: Develop a Safety-Oriented Model Predictive Controller for autonomous vehicles (website)
- Project – Center for Automated Vehicles with Multimodal Assured Navigation (CARMEN+), funded by the U.S. Department of Transportation (website)
- Buckeye AutoDrive Team – Control & Testing Department (GM-sponsored autonomous vehicle team)
- Publication and Presentation:
  - "Risk Aware Safe Control with Cooperative Sensing for Dynamic Obstacle Avoidance," *2026 IFAC 23th World Congress (Under review)* (website)
  - "Risk-Budgeted Control Framework for Balanced Performance and Safety in Autonomous Vehicles," *2026 IEEE American Control Conference (ACC) (Under review)* (website)
  - "Experimental Evaluation of Model Predictive Control and Control Barrier Functions for Autonomous Driving Obstacle Avoidance," *2025 IFAC 13th Symposium on Nonlinear Control Systems (NOLCOS)* (website)
  - "Enhancing Safety at Highway Ramps and Intersections Using Safe Cooperative Controls in Automated Vehicles," *2024 IEEE 27th International Conference on Intelligent Transportation Systems (ITSC)* (website)
  - "Centralized Policy Learning for Consensus Control of Connected and Automated Vehicles," presented at the *2025 AAAI Multi-Agent AI in the Real World Workshop*
  - "Optimizing Safety at Highway Ramps and Intersections: Implementing Safe Cooperative Control Systems in Automated Vehicles," presented at the *2024 CCAT Global Symposium on Mobility Innovation*

National Cheng Kung University (NCKU) Tainan, Taiwan
M.S. in Systems and Naval Mechatronic Engineering | GPA: 85.91/100 June 2016

EXPERIENCE

Motional Pittsburgh, PA
Intern, Autonomy Capabilities Systems Engineering May 2025 – August 2025

- **Developed safety metrics** for identifying safety critical events and potential critical agents to avoid the collision.
- The developed metrics can **identify 96% safety critical events** and 2% false positive rate among 150 events.
- Build emergency vehicles synthetic and autonomous vehicle interaction scenarios for simulation and verification.

National Chung-Shan Inst. of Sci. & Tech Taoyuan, Taiwan
System Engineer Nov. 2016 – May 2018, Oct. 2019 – July 2023

- **Accomplished 3 missions with 20 autonomous UAVs** by designing standard interface communication protocols to normalize the interfaces of UAV systems and enhance wireless bandwidth utilization, used by 46 interface communication messages and 9 operational procedures between UAV and GCS.
- **Coordinated with the shipyard and suppliers to install the Integrated Bridge Tactical Support System**, overseeing the installation of the bridge, communication network setup, and compliance with system functional requirements, and contributed to the factory acceptance test (FAT).
- **Redesigned the GCS for Medium Altitude Long Endurance (MALE) UAV to accommodate modern technology**, implementing system redundancy, turbo ring networks, and optimizing operational workflows.

TSMC (Taiwan Semiconductor Manufacturing Company) Tainan, Taiwan
Team Leader, Manufacturing Section May. 2018 - July. 2019

- **Enhanced tool productivity by 30% by leading a group of 15 operators** performing round-the-clock production operations associated with semiconductor manufacturing., developing clean room automated guided vehicle (AGV) systems, and improving automatic measuring data systems.