

Yu-Wen Chen

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EDUCATION

University of California, Berkeley

Berkeley, CA, USA

Ph.D. in Electrical Engineering and Computer Sciences (GPA: 4.0/4.0)

Sep. 2022 – Now

Advisor: Dr. Murat Arcak

National Taiwan University

Taipei, Taiwan

M.S. in Electrical Engineering (GPA: 4.0/4.0)

Sep. 2017 – June 2019

Advisor: Dr. Li-Chen Fu

Thesis: Dynamic Maneuver Control of Multi-Agent System with Input Saturation

National Taiwan University

Taipei, Taiwan

B.S. in Electrical Engineering (GPA: 3.7/4.0)

Sep. 2012 – June 2016

PUBLICATIONS

Journal Publications:

- Y.-W. Chen, M.-L. Chiang and L.-C. Fu, “Three-Dimensional Maneuver Control of Multi-agent Systems with Constrained Input,” in *IEEE Transactions on Cybernetics*, 2021
- M.-L. Chiang, Y.-W. Chen, C.-S. Chen and S.-H. Tsai, “Distributed Formation Control of Multi-agent Systems With Specified Order,” in *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 2020

Conference Publications:

- Y.-W. Chen, N. C. Martins and M. Arcak, “Hierarchical Decision-Making in Population Games,” *IEEE 64rd Conference on Decision and Control (CDC)*, Rio de Janeiro, Brazil, 2025
- Y.-W. Chen, C. Kizilkale and M. Arcak, “A Two-stage Mechanism for Prioritized Trajectory Planning in Multi-Agent Systems,” *American Control Conference (ACC)*, Denver, USA, 2025
- Y.-W. Chen, C. Kizilkale and M. Arcak, “Solving Monotone Variational Inequalities with Best Response Dynamics,” *IEEE 63rd Conference on Decision and Control (CDC)*, Milan, Italy, 2024
- Y.-W. Chen, M.-L. Chiang and L.-C. Fu, “Formation Control with Orientation Alignment by Constrained Input,” *21st IFAC World Congress*, Berlin, Germany, 2020
- Y.-W. Chen, M.-L. Chiang and L.-C. Fu, “Ordered formation control and affine transformation of Multi-Agent Systems without global reference frame,” *American Control Conference (ACC)*, Philadelphia, USA, 2019
- Y.-C. Huang, J.-T. Shen, M.-L. Chiang, Y.-W. Chen, T.-L. Chua and L.-C. Fu, “Dual Null-Space Based Controller Design with Signal Compensation for Formation with Conflicted Tasks,” *IEEE Conference on Control Technology and Applications (CCTA)*, Hong Kong, China, 2019

Thesis:

- Y.-W. Chen, L.-C. Fu, “Dynamic Maneuver Control of Multi-Agent System with Input Saturation,” 2019

TEACHING EXPERIENCE

Graduate Teaching Assistant (course: Linear System Theory)

Fall, 2023

University of California, Berkeley

Berkeley, CA, USA

- Held 2-hours recitation section and 2.5-hours office hour both once a week for 25+ graduate students
- Designed and graded 10 homework assignments, midterm, and final problem sets

Graduate Teaching Assistant (course: Adaptive Control Systems)

Spring, 2019

National Taiwan University

Taipei, Taiwan

- Guided 20+ students to accomplish Matlab simulations and their final projects
- Won the Best Teaching Assistant Award

Graduate Teaching Assistant (course: Nonlinear System Analysis)

Fall, 2018

National Taiwan University

Taipei, Taiwan

- Lectured stability proofs and preliminaries in Advanced Linear Algebra to 15+ students
- Won the Best Teaching Assistant Award

RESEARCH EXPERIENCE

Graduate Research Assistant (Ph.D.)

Arcak's Group (Advisor: Dr. Murat Arcak)

Sep. 2022 – Now

University of California, Berkeley

Graduate Research Assistant (M.S.)

Advanced Control Laboratory (Advisor: Dr. Li-Chen Fu)

Sep. 2017 – Sep. 2019

National Taiwan University

- Participated in 5+ top conference and journal publications and served as the first author in 3 of which
- Being Nominated as the *Best Master Thesis Award* by my advisor Dr. Li-Chen Fu and the oral committee

Undergraduate Researcher in Multi-robot Formation Control

Advanced Control Laboratory (Advisor: Dr. Ming-Li Chiang)

Aug. 2015 – June 2017

National Taiwan University

- Studied Graph and Advanced Linear algebra to present state-of-the-art papers about multi-agent control weekly
- Utilized Lyapunov and input-to-state stability theorems to design asymptotically stable multi-agent controller

Undergraduate Researcher in Game Theory

Professor Ho-Lin Chen's lab (Advisor: Dr. Ho-Lin Chen)

June 2015 – June 2016

National Taiwan University

- Participated in study group to learn topics of auction/bidding, cost-sharing, repeated game, and dynamic game
- Consulted with professor Chen twice a week to devise a cost-sharing mechanism for relieving congestion

PROJECT EXPERIENCE

Amazon Racing Car Project

University of California, Berkeley & Amazon

Fall. 2022 – Fall. 2023

Industry-Academy cooperation

- Led 3 master's students to design controllers for Amazon racing cars and implement them on hardware platform

Multi-UAV Formation Flying and Applications

National Chung-Shan Institute of Science & Technology (NCSIST)

Sep. 2018 – Nov. 2020

National Project

- Proposed a novel 3D multi-agent formation controller with convergence analysis to achieve online adaptation
- Conducted a 100+ UAVs simulation in Matlab and implemented the algorithm via *MAVROS* to verify the design

Feedback Algorithms Design for Combat Model

National Chung-Shan Institute of Science & Technology (NCSIST)

Aug. 2017 – Aug. 2018

National Project

- Designed a Game Theory based Weapon-Target Assignment and verified it by 5+ attrition models
- Transformed it into Control problem and introduced stability analysis to guarantee the sub-optimal performance

SPEECH EXPERIENCE

Invited Talk – Introduction to *ROS* and *MoveIt!*

Tunghai University

Oct. 2021

Taichung, Taiwan

- Promoted *ROS* and *MoveIt!*, frameworks for robot integration and manipulators, to 20+ graduate students

Workshop – 2D & nD Planning Algorithms

National Taiwan University of Science & Technology

Dec. 2020

Taipei, Taiwan

- Introduced 2D navigation problem and SLAM to 15+ graduate students and demonstrated via *ROS* packages
- Presented high-dimensional planning algorithms collected in *Open Motion Planning Library*

WORK EXPERIENCE

MediaTek Inc.

R&D Software Engineer

May. 2021 – Aug. 2022

Taipei, Taiwan

- Designed and maintained middleware framework for camera applications based on clients' requests

New Era AI Robotic Inc.

R&D Robotics Engineer

Nov. 2019 – May. 2021

New Taipei, Taiwan

- Designed motion planning algorithms to prevent Multi-DoF robotic arm from collisions in dynamic environments
- Applied 2D & nD motion planning to Autonomous Mobile Manipulator Robots via *ROS* and *MoveIt!* frameworks
- Processed 3D sensor data and 2D image pipeline to implement robot perception on Jetson AGX Xavier platform