

Yu-Wen Chen

Cell: (+1) 341-7668852 Email: yuwen_chen@berkeley.edu

EDUCATION

University of California, Berkeley <i>Ph.D. in Electrical Engineering and Computer Sciences (GPA: 4.0/4.0)</i> Advisor: Dr. Murat Arcak	Berkeley, CA, USA Sep. 2022 – Now
National Taiwan University <i>M.S. in Electrical Engineering (GPA: 4.0/4.0)</i> Advisor: Dr. Li-Chen Fu Thesis: <i>Dynamic Maneuver Control of Multi-Agent System with Input Saturation</i>	Taipei, Taiwan Sep. 2017 – June 2019
National Taiwan University <i>B.S. in Electrical Engineering (GPA: 3.7/4.0)</i>	Taipei, Taiwan 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) <i>University of California, Berkeley</i>	Fall, 2023 Berkeley, CA, USA
Graduate Teaching Assistant (course: Adaptive Control Systems) <i>National Taiwan University</i>	Spring, 2019 Taipei, Taiwan
Graduate Teaching Assistant (course: Nonlinear System Analysis) <i>National Taiwan University</i>	Fall, 2018 Taipei, Taiwan

RESEARCH EXPERIENCE

Graduate Research Assistant (Ph.D.) <i>Arcak's Group (Advisor: Dr. Murat Arcak)</i>	Sep. 2022 – Now <i>University of California, Berkeley</i>
Graduate Research Assistant (M.S.) <i>Advanced Control Laboratory (Advisor: Dr. Li-Chen Fu)</i>	Sep. 2017 – Sep. 2019 <i>National Taiwan University</i>
<ul style="list-style-type: none">Participated in 5+ top conference and journal publications and served as the first author in 3 of whichBeing Nominated as the <u>Best Master Thesis Award</u> by my advisor Dr. Li-Chen Fu and the oral committee	
Undergraduate Researcher in Multi-robot Formation Control <i>Advanced Control Laboratory (Advisor: Dr. Ming-Li Chiang)</i>	Aug. 2015 – June 2017 <i>National Taiwan University</i>
<ul style="list-style-type: none">Studied Graph and Advanced Linear algebra to present state-of-the-art papers about multi-agent control weeklyUtilized Lyapunov and input-to-state stability theorems to design asymptotically stable multi-agent controller	
Undergraduate Researcher in Game Theory <i>Professor Ho-Lin Chen's lab (Advisor: Dr. Ho-Lin Chen)</i>	June 2015 – June 2016 <i>National Taiwan University</i>
<ul style="list-style-type: none">Participated in study group to learn topics of auction/bidding, cost-sharing, repeated game, and dynamic gameConsulted with professor Chen twice a week to devise a cost-sharing mechanism for relieving congestion	

PROJECT EXPERIENCE

Amazon Racing Car Project <i>University of California, Berkeley & Amazon</i>	Fall. 2022 – Fall. 2023 <i>Industry-Academy cooperation</i>
<ul style="list-style-type: none">Led 3 master's students to design controllers for Amazon racing cars and implement them on hardware platform	
Multi-UAV Formation Flying and Applications <i>National Chung-Shan Institute of Science & Technology (NCSIST)</i>	Sep. 2018 – Nov. 2020 <i>National Project</i>
<ul style="list-style-type: none">Proposed a novel 3D multi-agent formation controller with convergence analysis to achieve online adaptationConducted a 100+ UAVs simulation in Matlab and implemented the algorithm via MAVROS to verify the design	
Feedback Algorithms Design for Combat Model <i>National Chung-Shan Institute of Science & Technology (NCSIST)</i>	Aug. 2017 – Aug. 2018 <i>National Project</i>
<ul style="list-style-type: none">Designed a Game Theory based Weapon-Target Assignment and verified it by 5+ attrition modelsTransformed it into Control problem and introduced stability analysis to guarantee the sub-optimal performance	

SPEECH EXPERIENCE

Invited Talk – Introduction to ROS and MoveIt! <i>Tunghai University</i>	Oct. 2021 <i>Taichung, Taiwan</i>
<ul style="list-style-type: none">Promoted ROS and MoveIt!, frameworks for robot integration and manipulators, to 20+ graduate students	
Workshop – 2D & nD Planning Algorithms <i>National Taiwan University of Science & Technology</i>	Dec. 2020 <i>Taipei, Taiwan</i>
<ul style="list-style-type: none">Introduced 2D navigation problem and SLAM to 15+ graduate students and demonstrated via ROS packagesPresented high-dimensional planning algorithms collected in <i>Open Motion Planning Library</i>	

WORK EXPERIENCE

MediaTek Inc. <i>R&D Software Engineer</i>	May. 2021 – Aug. 2022 <i>Taipei, Taiwan</i>
<ul style="list-style-type: none">Designed and maintained middleware framework for camera applications based on clients' requests	
New Era AI Robotic Inc. <i>R&D Robotics Engineer</i>	Nov. 2019 – May. 2021 <i>New Taipei, Taiwan</i>
<ul style="list-style-type: none">Designed motion planning algorithms to prevent Multi-DoF robotic arm from collisions in dynamic environmentsApplied 2D & nD motion planning to Autonomous Mobile Manipulator Robots via ROS and MoveIt! frameworksProcessed 3D sensor data and 2D image pipeline to implement robot perception on Jetson AGX Xavier platform	