

YI-HSUAN CHEN

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RESEARCH INTEREST

Robotics, Dynamics and Control, Motion Planning, Autonomous Systems, Flight Mechanics

EDUCATION

University of Maryland (UMD)

Ph.D. in Aerospace Engineering

- Motion and Teaming (Mo-T) Lab, Advisor: Dr. Michael Otte

College Park, USA

Aug. 2022 - May 2027 (Expected)

King Abdullah University of Science and Technology (KAUST)

M.S. in Mechanical Engineering

- GPA : **3.81/4.00**
- Robotics, Intelligent Systems, and Control (RISC) lab, Advisor: Dr. Eric Feron

Thuwal, Saudi Arabia

Aug. 2020 - May 2022

National Cheng Kung University (NCKU)

B.S. in Aeronautics and Astronautics

- GPA : **4.07/4.3**, graduate ranking: **2/66**
- Intelligent Embedded Control (IEC) Lab, Advisor: Dr. Chao-Chung Peng

Tainan, Taiwan

Sep. 2015 - Jun 2019

RESEARCH EXPERIENCE

Graduate Research Assistant, Advisor: Dr. Michael Otte

Motion and Teaming Laboratory (Mo-T Lab), UMD

- Researching on safe (reachable set-based) motion planning for multi-agent systems.

Aug. 2022 – PRESENT

UMD, USA

Master Thesis Research, Advisor: Dr. Eric Feron

Robotics, Intelligent Systems, and Control (RISC) lab

- Designed a triple-integral control framework to counteract the unknown aerodynamic drag that will be increasing quadratically with time during zero-gravity flight. [[Project link](#)][[Youtube link](#)]
- Built a flight simulator to verify the proposed control strategy and visualized it in FlightGear.
- Published in AIAA SciTech 2023.

Aug. 2020 – May 2022

KAUST, SA

Undergraduate Researcher, Advisor: Dr. Chao-Chung Peng

Intelligent Embedded Control (IEC) Lab

- Applied reconfiguration technique combined with sacrificing yaw control to recover flight control in the presence of single motor failure. [[Project link](#)] [[Youtube link](#)]
- Applied Lagrangian mechanics on deriving the mathematical model of a quadrotor, and designed a PID controller using feedback linearization.
- Collaborated with Information and Communications Research Laboratories of Industrial Technology Research Institute (ITRI).

Jan. 2018 – Dec. 2019

NCKU, TW

Selected Course Projects

UMD ENAE646 - Advanced Dynamics, *Lecturer: Dr. Derek Paley*

Project title: "Torque-Free Motion of a Rigid Body." [[Project link](#)][[Youtube link](#)]

- Analyze the motion of a torque-free rigid body and determine its trajectory in the inertial frame.

KAUST EE376 - Dynamic Programming and Optimal Control, *Lecturer: Dr. Meriem Taous Laleg*

Project title: "NMPC for Quadrotor trajectory tracking with constrained inputs." [[Project link](#)] [[Youtube link](#)]

- Developed a nonlinear model predictive controller to realize trajectory tracking with constrained inputs.

PUBLICATION

Chen, Yi-Hsuan, and Eric Feron. "Design of Longitudinal Control for Reduced-Gravity Atmospheric Flights." In *AIAA SCITECH 2023 Forum*. 2023.

Lien, Yu-Hsuan, Chao-Chung Peng, and **Yi-Hsuan Chen**. 2020. "Adaptive Observer-Based Fault Detection and Fault-Tolerant Control of Quadrotors under Rotor Failure Conditions." In *Applied Sciences*. 10, no. 10: 3503.

AWARDS & HONORS

- Gustave J. Hokenson Fellowship** 2023
- Awarded by the UMD Aerospace Engineering Department
- Honorary Member of Phi Tau Phi Scholastic Honor Society** 2019
- The highest honor given to the top 1% of graduates in university, based on excellent academic achievements as well as moral conduct
- Professor Li Ke-Rang Scholarship** 2018
- For university students who are the top five students in their department
- Academic Achievement Award*3 (Top 10% in class each academic year)** 2015 – 2019
- Received every academic year
- Distinguished Physics Contest Award (Top 10% of all candidates)** 2016

TEACHINGS

- Teaching Assistant on ENAE432 Control of Aerospace Systems** Jan. 2023 - May. 2023
Department of Aerospace Engineering UMD
- Lead weekly discussion sessions by giving 50-minute review lectures.
 - Provide consultation during regular TA hours and graded assignments and exams.
- Teaching Assistant on Engineering Mathematics** Sep. 2019 - Jun. 2020
Department of Aeronautics and Astronautics NCKU
- Provide consultation during regular TA hours and graded assignments and exams.
- After-School Part-time Tutor** Opt. 2018 – June 2019
National Tainan Chia-Chi Senior High School Tainan, Taiwan
- Offer after-school consultation in Mathematics and Physics for high school students

TECHNICAL SKILLS

- Programming Languages** MATLAB, C++, Python, LabVIEW, L^AT_EX
- Engineering Tools** Linux, ROS/ROS2, docker, AutoCAD, CATIA, PSoC Creator
- Optimization Softwares** Mosek, Yalmip, CasADi, SOSTOOLS, CVX
- Languages** Mandarin (native), English (advanced), Taiwanese (fluent)
- TOEFL iBT: 104 (Reading: 29 | Listening: 27 | Speaking: 22 | Writing: 25)
 - GRE: 324 (Verbal: 157 | Quantitative: 167 | AWA: 3.0)

VOLUNTEER EXPERIENCE

- Taiwan-United States Alliance (TUSA) Global Ambassador Scholarship Program** 2019
- Volunteered as a Language Exchange Partner to improve English speaking skills
 - Assisted international students in settling into life in Tainan

REFERENCES

- Michael Otte**
Assistant Professor, Department of Aerospace Engineering
Affiliated with Computer Science
University of Maryland
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- Eric Feron**
Professor, Program in Electrical and Computer Engineering
Affiliated with Mechanical Engineering and Bioengineering
King Abdullah University of Science and Technology
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