

YI-HSUAN CHEN

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RESEARCH INTEREST

Dynamics and Control, Motion Planning, Autonomous system, Flight Mechanics

EDUCATION

University of Maryland

Ph.D in Aerospace Engineering, Cumulative GPA : 3.65/4.00
Motion and Teaming (Mo-T) Lab

College Park, USA

Aug. 2022 - current
Advisor: Prof. Michael Otte

King Abdullah University of Science and Technology (KAUST)

Master's in Mechanical Engineering, Cumulative GPA : 3.81/4.00
Robotics, Intelligent Systems, and Control (RISC) lab

Thuwal, Saudi Arabia

Aug. 2020 - May 2022
Advisor: Prof. Eric Feron

National Cheng Kung University (NCKU)

B.S. in Aeronautics and Astronautics, Overall GPA: 4.07/4.3
Intelligent Embedded Control (IEC) Lab

Tainan, Taiwan

Sep. 2015 - Jun 2019
Advisor: Prof. Chao-Chung Peng

RESEARCH EXPERIENCE

Master Thesis Student

Aug. 2020 – May 2022

Department of Mechanical Engineering

KAUST, SA

Thesis title: "Control design and analysis for reduced gravity atmosphere flights"

- Advisor: Prof. Eric Feron
- Designed a triple-integral control framework to counteract the unknown aerodynamic drag that will be increasing quadratically with time during zero-gravity flight.
- Built a flight simulator to verify the proposed control strategy and visualized it in FlightGear.
- The work is published in AIAA SciTech 2023.

Graduate Course Research Project

Jan. 2021 – May 2021

EE376 - Dynamic Programming and Optimal Control

KAUST, SA

Project title: "NMPC for Quadrotor trajectory tracking with constrained inputs"

- Tutor: Prof. Meriem Taous Laleg
- Developed a nonlinear model predictive controller to realize trajectory tracking with constrained inputs.

Undergraduate Researcher

Jan. 2018 – Dec. 2019

Department of Aeronautics and Astronautics

NCKU, TW

Project title: "Fault Tolerant Control of a quadrotor under actuator failures"

- Advisor: Prof. Chao-Chung Peng
- Applied reconfiguration technique combined with sacrificing yaw control to recover flight control in the presence of single motor failure.

Project title: "Dynamics Modeling and Control for a quadrotor"

- Advisor: Prof. Chao-Chung Peng
- 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).

PUBLICATION

Chen, Yi-Hsuan, and Eric Feron. "Design of Longitudinal Control for Reduced-Gravity Atmospheric Flights." *AIAA SCITECH 2023 Forum*. 2023. <https://doi.org/10.2514/6.2023-0218>.

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.", *Applied Sciences*. 10, no. 10: 3503. <https://doi.org/10.3390/app10103503>.

TEACHING EXPERIENCE

- Teaching Assistant in ENAE432 Control of Aerospace Systems** Jan. 2023 - May. 2023
Department of Aerospace Engineering UMD
- Lead weekly discussion sessions by giving 50-minute review lecture.
 - Provide consultation during regular TA hours and graded assignments and exams.
- Teaching Assistant in 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

AWARDS & HONORS

- 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
 - A well-known scholarship sponsored by the Honorary Prof. Li, Ke-Rang
- Academic Achievement Award*3 (Top 10% in class each academic year)** 2015 – 2019
- Distinguished Physics Contest Award (Top 10% of all candidates)** 2016

TECHNICAL SKILLS

- Programming Languages** MATLAB, C++, Python, LabVIEW, L^AT_EX
- Engineering Tools** AutoCAD, CATIA, PSoC Creator, ROS
- 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

Eric Feron

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Affiliated with Mechanical Engineering and Bioengineering
King Abdullah University of Science and Technology
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