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Master of Philosophy
Aeronautical and Aviation Engineering
The Hong Kong Polytechnic University

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Education

- **The Hong Kong Polytechnic University (HKPolyU)** *2022-now*

Master of Philosophy (Passed Confirmation of Registration) CGPA: 3.48/4.30

- Thesis title: Design and Control of a Soft Aerial Vehicle for Conducting Aerial Grasping
- Supervised by Prof. Chih-yung WEN (AAE) and co-supervised by Dr Henry K. CHU (ME)
- affiliated with the MAV/UAV Lab (AIRo Lab)

- **The Hong Kong Polytechnic University** *2018-2022*

Bachelor of Engineering (Honours) in Mechanical Engineering GPA: 3.50/4.30

- Dean list (2019/2020)
- FYP title: Development of an Aerial Air Quality Monitoring Platform Based on Vertical Takeoff and Landing (VTOL) Unmanned Aerial Vehicle (UAV)
- Computer Programming (C++): A+; Engineering Management: A; Engineering Design: A

Publication

- **H. C. Cheung**, C.-W. Chang, B. Jiang, C.-Y. Wen, and H. K. Chu, "A modular pneumatic soft gripper design for aerial grasping and landing," http://arxiv.org/abs/2311.00390 (preprint, submitted to ***IEEE RoboSoft 2024***)
- C.-W. Chang, L.-Y. Lo, **H. C. Cheung**, Y. Feng, A.-S. Yang, C.-Y. Wen, and W. Zhou, "Proactive guidance for accurate uav landing on a dynamic platform: A visual– inertial approach," ***Sensors***, vol. 22, no. 1, p. 404, 2022.

Awards and Scholarship

- **HKSAR Government Scholarship Fund - Endeavour Merit Award** *2018/19 - 2022/23*
- **The Hong Kong Jockey Club Scholarships – Undergraduate Scholarship**
  - The Hong Kong Jockey Club *2019/20 - 2021/22*
- **BEA Inspiring Student Scholarship**
  -Bank of East Asia *2019/20*
- **Best Engineering Design Award** The Robocon 2019 Hong Kong Contest
  - Hong Kong Science and Technology Parks Corporation *2019*
- **HKSAR Government Scholarship Fund - Talent Development Scholarship** *2018/19 -2019/20*
- **Two Champion; Four 1st Runner-up; Three 2nd Runner-up** International Robotic Olympic 2017
  - Hong Kong Robotic Olympic Association *2017*
- **(Senior Group) Second Prize; Best Design Award** Fun Science Competition 2017 "Stay right there"
  - Hong Kong Science Museum *2017*
- **Hong Kong Top 10 Outstanding Teens Award** Hong Kong Outstanding Teens Election
  - Hong Kong Playground Association *2016*

Work Experience

- **The Hong Kong Polytechnic University** *May 2023 - now*

Project Technical Assistant (Part-time) | Supervisor: Prof. Chih-yung WEN MAV/UAV Laboratory

– Has associated with the research project "Research Centre for Unmanned Autonomous Systems" (P0046487)
– Providing technical support for 3D printing
– Providing technical support for mechatronics design

- **Hong Kong Center for Construction Robotics** *Jan 2023 - Jun 2023*

Research Assistant (Part-time)

– Provided technical support for 3D printing
– Designed the mechanical structure of products and drawing the 3D CAD drawings

- **The Hong Kong Polytechnic University** *Sep 2022 - May 2023*

Project Assistant (Part-time) | Supervisor: Prof. Chih-yung WEN MAV/UAV Laboratory

– Had associated with the research project "Research Centre for Unmanned Autonomous Systems" (P0046487)
– Provided technical support for composite manufacturing (Carbon fiber airframes)
– Provided technical support for 3D printing

- **Hong Kong Center for Construction Robotics** *Jun 2022 - Aug 2022*

Student Helper (Full-time)

  – Joined one of the existing start-up teams, which is focusing on construction robots
  – Designed the mechanical structure of products and drawing the 3D CAD drawings

- **The Hong Kong Polytechnic University** *Aug 2021 - May 2022*

Student Assistant (Part-time) | Supervisor: Prof. Chih-yung WEN MAV/UAV Laboratory

  – Had associated with the research project "Trial: Development of Vertical Take-Off and Landing (VTOL) Unmanned Aerial Vehicle (UAV) for Air Quality Monitoring in Greater Bay Area" (K-ZPJU)
  – Provided technical support for 3D printing
  – Designed the mechanical structure of a movable landing platform for UAVs and controlled its movement with Arduino programming

- **The Hong Kong Polytechnic University** *Dec 2020 - Jul 2021*

Student Assistant (Part-time and Full-time) | Supervisor: Dr Henry Kar Hang CHU Biomimetic Robotics Laboratory

  – Applied vision-based control for a robot arm (UR5)
  – Conducted system calibration to ensure precise control
  – Incorporated deep learning techniques, specifically Convolutional Neural Networks (CNN), for grasping random objects.

- **Carmel Divine Grace Foundation Secondary School** *Sep 2018 - Aug 2020*

Robotics Team Coach (Part-time) Hong Kong

  – Led students to participate in International Robotic Olympiad 2019
  – Taught students how to use CAD (Computer Aided Drawing) (2D: CorelDRAW and 3D: SolidWorks)
  – Taught students how to build robots with DC gear motors, servo motors, and micro-controllers

Extra-curricular Activities

- **Internal Vice President,** Outstanding Teens Association (Hong Kong) *Oct 2020 - now*

  – Contacting and promoting events to OTA members
  – Handling Financial management
  – Coordinating internal administration and organizing external voluntary services (e.g., University Simulations in 2021 (https://skmdonaldshek.wixsite.com/hkotausims2021) and 2022 (https://skmdonaldshek.wixsite.com/hkotausims2022)

- **Judge and Organizer,** Hong Kong Robotics Club *Apr 2018 - now*

  – Demonstrated judgment in the Hong Kong Robotic Olympiad and International Robotic Olympiad
  – Contributed to the preparation and event follow-ups

- **Team member,** HKPolyU Unmanned Aerial Vehicles Team *Sep 2019 - Aug 2022*

  – Had been prepared for UAV Challenge – Medical Rescue:
    - A mechanical structure was designed to release a ground vehicle from a fixed-wing VTOL
    - Developed a geofence system design for the fixed-wing VTOL
  – Built a fixed-wing VTOL (vertical take-off and landing) unmanned aerial vehicle with postgraduate teammates (Mini Talon: https://youtu.be/ELSqvWizsCc, start from 00:57-01:50)
  – Designed the mechanical structure of UAVs

- **Vice President (Executive),** Outstanding Teens Association (Hong Kong) *Aug 2018 - Sep 2020*

  – Led the team of the Academic and Development Committee to plan and organize a Peer to Peer Programme (P2P X STEM) for all students in primary schools and secondary schools in Hong Kong
  – Contacting with other student leaders and teachers to promote P2P X STEM
  – Sharing personal experience on STEM (robotics) in P2P X STEM

- **Leader of the Team, Crimson,** HKPolyU FENG Robotics Club *Oct 2018 - Oct 2019*

  – Chief designer of Manual Robot 1 (A multi-tasking robot with several types of actuators)
  – Designer of the rack of compressed air tank for pneumatic cylinders
  – Won Best Engineering Award in the Robocon 2019 Hong Kong Contest

Technical Skills and Interests

Languages: English, Cantonese, Mandarin
CAD & CFD: AutoCAD, CorelDRAW, Fusion 360, SOLIDWORKS, TinkerCAD, Ansys Fluent
Programming language libraries & Frameworks: Arduino, C++, Python, ROS, OpenCV, ArduPilot, PX4, TensorFlow, micro:bit, MIT App Inventor