

# CHEUNG Hiu Ching, Athena

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 High-speed Thermo-fluid and MAV/UAV Lab (AIRo Lab) at the Research Centre for Unmanned Autonomous Systems (RCUAS)

### • 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) (Supervised by Prof. Chih-yung WEN)

- Virtual summer exchange: Girton College, Cambridge - Mathematics for Engineering Online Summer Programme, 2021

## 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, accepted by **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

- Automated pick-and-place task with object recognition using deep learning
- Applied vision-based control for a robot arm (UR5) and 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

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• **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/hkotasims2021>) and 2022 (<https://skmdonaldshek.wixsite.com/hkotasims2022>))

• **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/ELSqvWizCCc>, 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

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**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

**Areas of Interest:** roller skating, badminton, football, piano, guitar, dizi (Chinese flute), building robots, reading

## MEDIA

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- **Interview Video, Student Affairs Office @ PolyU**

*Jun 2022*

*SEN Students' Sharing*

- A Big Fan of Robotics [\[Link\]](#)[\[Video\]](#)

- **News articles, Ming Pao**

*Jul 2018 - Aug 2018*

*Exceptional personal endeavour*

- Motivated by my resolute determination to pursue a career in engineering, I successfully overcame childhood illness and the obstacle of hearing loss, which shattered my aspirations of becoming a pilot. Despite encountering personal challenges, including my father's hospitalization due to a stroke the day before the pivotal HKDSE Examination, I persevered and achieved satisfactory results, providing me with the opportunity to pursue engineering studies at my preferred university. [\[Link\]](#)
- Following up on the previous news articles, I had ultimately obtained admission to PolyU Mechanical Engineering. [\[Link\]](#)

- **News articles, Wen Wei Po**

*Jun 2016*

*2016 Hong Kong Top 10 Outstanding Teens Award*

- List of 2016 Hong Kong Top 10 Outstanding Teens Award [\[Link\]](#)
- Despite being diagnosed with moderate to severe hearing loss, I persevered and adapted my aspirations, excelling in robotics competitions and earning recognition as one of Hong Kong's Top 10 Outstanding Teens. [\[Link\]](#)