

CHEUNG Hiu Ching, Athena

Robotics Researcher

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EDUCATION

• Arizona State University

Will be registered in Spring 2026

Robotics and autonomous systems (mechatronics and automation), PhD

- Research interests: robot manipulation, surgical robotics, and soft robotics

- Supervised by Dr Shan LIN (Medical Automation, Robotics & General Intelligence Lab)

• The Hong Kong Polytechnic University (HKPolyU)

2022-2025

Master of Philosophy (Aeronautical and Aviation Engineering)

- 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

- 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**, B. Jiang, Y. Hu, H. K. Chu, C.-Y. Wen, and C.-W. Chang, "Aerial grasping with soft aerial vehicle using disturbance observer-based model predictive control," (*Preprint*) 2024. [Online]. Available: <https://doi.org/10.48550/arXiv.2409.14115>
- **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," *2024 IEEE 7th International Conference on Soft Robotics (RoboSoft)*, San Diego, CA, USA, 2024, pp. 82-88, doi: 10.1109/RoboSoft60065.2024.10521918.
- 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 - 2023/24

• 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

• Hong Kong Top 10 Outstanding Teens Award Hong Kong Outstanding Teens Election

- Hong Kong Playground Association and The Outstanding Young Persons' Association

2016

WORK EXPERIENCE

• The Hong Kong Polytechnic University

Jan 2025 - now

Research Administrative Assistant (Full-time)

AIRO Laboratory

- Associating with the project "Research Centre for Low Altitude Economy" (4-CE0Q)
- Assisting with a book ("New Space: From Low Earth Orbit to the Moon and Beyond") that is to be published, addressing tasks such as formatting the citations and reference lists, modifying the diagrams

• Pigeon City | Omnilearning ECA Center | Intelligent Software Co Ltd

Oct 2024 - Feb 2025

STEM Tutor (Part-time)

- Teaching STEM courses: UAV swarm, LEGO EV3

• The Hong Kong Polytechnic University

May 2023 - Aug 2024

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

AIRO Laboratory

- Had associated with the research project "Research Centre for Unmanned Autonomous Systems" (P0046487)
- Provided technical support for 3D printing
- Provided 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 drew the 3D CAD drawings

• The Hong Kong Polytechnic University

Sep 2022 - May 2023

Project Assistant (Part-time) | Supervisor: Prof. Chih-yung WEN

AIRO 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 drew the 3D CAD drawings

• The Hong Kong Polytechnic University

Aug 2021 - May 2022

Student Assistant (Part-time) | Supervisor: Prof. Chih-yung WEN

AIRO 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 - Jun 2020

Robotics Team Coach (Part-time)

Hong Kong

- Led students to win in the 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

VOLUNTEER SERVICES AND EXTRA-CURRICULAR ACTIVITIES

- **Judge and Organizer**, Hong Kong Robotics Club *Apr 2018 - now*
 - Demonstrating judgment in the Hong Kong Robotic Olympiad and International Robotic Olympiad
 - Tutoring in InnoTech Workshops in InnoCarnival (since 2013)
 - Contributing to the preparation and event follow-ups
- **Wooden Boat Crafting Skills - Intern**, The Warehouse Teenage Club *Jun 2024 - now*
 - Intangible Cultural Heritage Documentation and Promotion Project
 - Engaged in learning and participating in the process of wooden boat crafting to ensure compliance with relevant safety standards and requirements.
 - Involved in documenting the craft of wooden boat making, meticulously recording the production process and various details.
- **Internal Vice President**, Outstanding Teens Association (Hong Kong) *Oct 2020 - Aug 2024*
 - Contacted and promoting events to OTA members
 - Handled Financial management
 - Coordinated internal administration and organized external voluntary services (e.g., University Simulations in 2021 (<https://skmdonaldshek.wixsite.com/hkotausims2021>) and 2022 (<https://skmdonaldshek.wixsite.com/hkotausims2022>))
- **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)
- **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
- **Hong Kong Young Ambassador**, Hong Kong Young Ambassador Scheme *Oct 2016 - May 2021*
 - Contributing voluntary service (local service to promote Hong Kong tourism)
 - Helped in Tourism Promotional Events (e.g. 2019 Cathay Pacific International Chinese New Year Night Parade, Hong Kong Well-wishing Festival, Respiration - The Feast, etc.

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, LEGO EV3, Tello TT

• Interview Video, Student Affairs Office @ PolyU

Jun 2022

SEN Students' Sharing

- A Big Fan of Robotics

[https://www.polyu.edu.hk/sao/student-resources-and-support-section/special-needs-support/students-sharing/athena_a-big-fan-of-robotics/]

[<https://youtu.be/Oj3ewcWgY5c?si=zkdg8hLiU-TVvl3f>]

• 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.

[https://www.mingpaocanada.com/tor/htm/News/20180712/HK-gbm_r.htm]

- Following up on the previous news articles, I had ultimately obtained admission to PolyU Mechanical Engineering.

[https://www.mingpaocanada.com/VAN/htm/News/20180807/HK-gaa1_r.htm]

• 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

[<http://paper.wenweipo.com/2016/06/29/ED1606290003.htm>]

- 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.

[<http://paper.wenweipo.com/2016/06/29/ED1606290001.htm>]