

# CHEUNG Hiu Ching, Athena

MPhil Year 2 Student

Aeronautical and Aviation Engineering

The Hong Kong Polytechnic University

🏠 <https://athenachc.github.io/>

✉ [athena-hiu-ching.cheung@connect.polyu.hk](mailto:athena-hiu-ching.cheung@connect.polyu.hk)

🌐 <https://github.com/HKPolyU-UAV>

🌐 <https://github.com/Athenachc>

🌐 [www.linkedin.com/in/athena-cheung-chc](http://www.linkedin.com/in/athena-cheung-chc)

## EDUCATION

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### • The Hong Kong Polytechnic University (HKPolyU)

2022-now

*Master of Philosophy (Passed Confirmation of Registration)*

- 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)

- Relevant TA duty: 1) PolyU CubeSat Mission - Space Debris Removal (Feb to Apr 2023): mentored secondary students to finish their CubeSat and final presentation. 2) Astron: Space Lab - STEM programme (Nov to Dec 2023): mentoring secondary students to utilize Python programming and computer vision techniques to calculate the velocity of the International Space Station.

### • 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

- Relevant TA duty: PolyU Junior Research Mentoring Programme (May to Aug 2021): mentored secondary students to guide and encourage them in exploring research opportunities.

## PUBLICATION

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- **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," (*submitted to **IEEE Robotics and Automation Letters***) 2024. [Online]. Available: <https://arxiv.org/abs/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

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- **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
- **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 and The Outstanding Young Persons' Association 2016

## WORK EXPERIENCE

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- **The Hong Kong Polytechnic University** May 2023 - Aug 2024  
*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

## VOLUNTEER SERVICES AND EXTRA-CURRICULAR ACTIVITIES

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- **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
- **Internal Vice President**, Outstanding Teens Association (Hong Kong) Oct 2020 - Aug 2024
  - Contacted and promoted events to OTA members
  - Coordinated 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>))
- **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