

Education

University of Waterloo

MASc in Mechanical and Mechatronics Engineering | GPA: 89.67

Advisor: Prof. Soo Jeon

Courses: Optimal Control, Adaptive Control, Video Processing, Machine Learning

Ontario, Canada

Sep. 2024 – Present

The Hong Kong Polytechnic University

B.Eng. (Honors) in Mechanical Engineering

Graduated with First Class Honors

Thesis: *A mobile robot with an active suspension system for navigation in uneven terrain*

Kowloon, Hong Kong

Sep. 2018 – Jun. 2024

(Mandatory Military service: 2021–2023)

Research & Work Experience

Mechanical Systems Control Lab, UWaterloo

Graduate Student Researcher

Advisor: Prof. Soo Jeon

- Designing a Next-Best-View planner for robotic grasping under occlusion.

Ontario, Canada

Sep. 2024 – Present

Robotics and Machine Intelligence Lab, HKPolyU

Advisor: Prof. David Navarro-Alarcon

Student Researcher (Undergraduate Research and Innovation Scheme) Sep. 2023 – Jun. 2024

- Developed motion planning and control strategies for the dual-arm robot Tiago++ for bimanual manipulation tasks.

Kowloon, Hong Kong

Undergraduate Research Assistant

Dec. 2020 – Jun. 2021

- Built a mobile robot capable of autonomous navigation over liquid and muddy terrain.

- Implemented a vision-based localization and navigation system using artificial markers.

Origami Labs (Start-up)

Engineering Intern

- Integrated an accelerometer-based trigger system for automatic microphone activation.

- Applied signal processing (low-pass filtering) to reduce environmental noise in hardware prototypes.

Tsuen Wan, Hong Kong

Jul. 2020 – Sep. 2020

Projects

End-to-End Visual Grasping with PPO, UWaterloo

SYDE 673 Video Processing and Analysis (Course Project)

- Developed a PPO-based grasping policy using the Barrett WAM arm in the Genesis simulator.

- Designed a visual reward function based on corner overlap, contact detection, and lift height.

- Built a multi-environment camera system for robust, parallelized vision-based training.

Jan. 2025 – Apr. 2025

Adaptive Control of a 2-DOF Robotic Arm, UWaterloo

ME780 Adaptive Control (Course Project)

- Implemented a Model Reference Adaptive Control (MRAC) scheme to adaptively estimate unknown dynamics and ensure stable trajectory tracking.

- Derived Lyapunov-based adaptation laws and validated controller performance in MATLAB/Simulink.

Sep. 2024 – Dec. 2024

Active Suspension for Navigating Rough Terrain, HKPolyU

Undergraduate Thesis Project

- Designed and built a mobile robot with four independently actuated vertical suspension units

Sep. 2023 – Jun. 2024

using stepper motors.

- Integrated IMU feedback to detect terrain pitch and actively adjust body height for stable navigation.

Teaching Experience

ME549/MTE544 Autonomous Mobile Robotics

University of Waterloo

Teaching Assistant

Winter 2025, Fall 2025

- Assisted with lab sessions, and student support on topics including localization, mapping, and control.

Scholarships & Awards

International Master's Award of Excellence (IMAE), UWaterloo	2024 – 2025
Undergraduate Research Program Scholarship, HKPolyU	2023
Dean's Honour List, HKPolyU	2020/21, 2023/24
Full Entry Scholarship, HKPolyU	2018 – 2024

Extracurricular Activities

Volunteer (Score Tally), MME Graduate Research Symposium, UWaterloo	Nov. 2024
Peer Tutor in AMA1120 (Basic Mathematics II), HKPolyU	Jan. 2024 – May 2024
Mentor, Korean Student Association, HKPolyU	Sep. 2023 – Dec. 2023
Team leader, STEM Learning Kits for Overseas Students, HKPolyU	Jun. 2020 – Aug. 2020

Skills

Programming: Python, C++, MATLAB, Shell

Tools: PyTorch, ROS 1 & 2, OpenCV, Git, \LaTeX

Robots: Franka Panda, Barrett WAM, Tiago++, TurtleBot

Simulation: PyBullet, Genesis, Gazebo, Simulink

Hardware: IMU, RealSense L515/D455, Arduino, Jetson Orin, Raspberry Pi