MUSHFIQUE TANZIM MUZTABA

+85256014576 | mushfiquetm@gmail.com | LinkedIn | Portfolio | Hong Kong

EDUCATION

The Hong Kong Polytechnic University (Entry Scholarship) **Hong Kong**
Bachelor of Engineering (Honours) in Mechanical Engineering *Graduation Date: June 2026*

WORK EXPERIENCE

CLP Power Hong Kong **Hong Kong**
Sandwich Intern *July 2024 – June 2025*

Project Execution Team (PET)

- Gained in-depth knowledge of CLP's Project Management Governance System Lifecycle by completing training under the Project Management Academy to enhance project execution and governance.
- Developed scalable Lessons Learned solution using Microsoft Power Apps, enabling 100+ team members to capture and share project insights, with planned wider rollout.
- Implemented interactive engagement features (likes, leaderboards), advanced filtering, and business group driven approval workflows using Power Automate, reducing feedback turnaround time by 70%.

Hong Kong Battery Energy Storage System (HKBESS)

- Designed and launched Management of Change (MOC) App using Microsoft Power Apps, streamlining change processes for the Hung Shui Kiu 'A' Substation Project.
- Engineered dynamic, multi-level approval routing using Power Automate, reducing approval time by 50%, with real-time status tracking and Microsoft Teams integration for automated notifications.
- Researched various risks and operational considerations, documenting findings in the risk register to enhance safety.

Thai German Graduate School of Engineering (TGGS) **Bangkok, Thailand**
Research Intern *August 2023*

- Developed and refined initial concept sketches, progressing to a detailed 3D model of the motorbike dolly for crash testing using SOLIDWORKS for precise visualization and design accuracy.
- Utilized Finite Element Method (FEM) techniques to analyse and optimize the dolly's structural integrity, ensuring enhanced durability and performance under crash testing conditions.
- Engineered a crash cushion system, effectively minimizing impact forces and reducing damage during crash scenarios.

PROJECT EXPERIENCE

Autonomous Mobile Robot with Semantic Mapping *January 2026 – May 2026*

- Design and develop a differential-drive autonomous mobile robot powered by Raspberry Pi for real-time navigation and environmental perception.
- Implement LiDAR- and IMU-based SLAM within ROS to generate 2D grid maps in unknown environments.
- Integrate multi-sensor system (LiDAR, camera, IMU, temperature and gas sensors) via GPIO, I2C, and USB for synchronized data acquisition.
- Deploy lightweight deep learning models for real-time object detection and semantic map annotation.

Autonomous Shooting System *November 2025*

- Developed autonomous targeting system using Python, OpenCV, and Raspberry Pi with multi-method HSV detection achieving 90% accuracy under variable lighting conditions.
- Implemented PID controller (Kp=0.12, Ki=0.005, Kd=0.25) with 5-frame position smoothing and dual dead zones for precise 2-axis servo control via I2C PWM interface.
- Integrated trajectory compensation algorithm and GPIO-controlled firing sequence with automated target acquisition at 100cm range.

AI Multi-Model Object Detection System *October 2025*

- Trained YOLOv11n model achieving 90-94% detection accuracy on custom dataset of 100+ images using PyTorch and Roboflow.
- Integrated (YOLO + HSV color classifier) for bottle cap color identification with 82-99% confidence.
- Implemented machine learning pipeline from labeling to model deployment using Python and OpenCV.

Designed and Manufactured an Automated Trolley *September 2023*

- Collaborated with a multidisciplinary team to develop automated trolley for industrial applications using SOLIDWORKS for precise design, ensuring efficiency.
- Solved loading/unloading, straight-line motion, and 90° turn challenges, demonstrating expertise.

Designed a Cleaning Device for the elderly people of Hong Kong *November 2022*

- Led 7-member team in researching and developing cleaning device for elderly users, applying functional decomposition, mind mapping, and concept sketches for ideation.
- Built SOLIDWORKS prototype with optimized architecture, components, and materials.

Redesigned a Table Fan *November 2022*

- Collaborated with a team of seven people to analyse and redesign table fan components for improved performance and manufacturability, based on analysis and market research.
- Employed hand-drawn sketches and CAD models in SOLIDWORKS for detailed prototyping.

Assembled a Robot Arm *March 2022*

- Designed 6-DOF robot arm in SOLIDWORKS, engineering key components: cover, base, shoulder support, upper arm, power cable, and servo motor subassembly.
- Assembled custom and pre-designed parts to complete functional robot arm.

LEADERSHIP AND CAMPUS ENGAGEMENT

PolyU ENGL English Debate Club **Hong Kong**

Creative Designer *August 2024 – June 2025*

- Designed visual content (social posts, posters, logos, merchandise) to communicate brand identity and increase engagement across 500+ club members.

PolyU International Student Association **Hong Kong**

Creative Designer and Social Media Manager *July 2023 – June 2024*

- Created engaging graphics, videos, and written posts for social media platforms, successfully reaching over 15,000 views to promote the association's mission and engage with the target audience.

PolyU Student Halls of Residence **Hong Kong**

Event Organizer *November 2022 – June 2025*

- Organized and led inter-hall activities *involving over 120 participants,* fostering community and teamwork.

SKILLS

Technical Skills

- SOLIDWORKS, AutoCAD, MATLAB, Python, SQL
- PyTorch, Ultralytics YOLO, OpenCV, Roboflow, Object Detection
- React, Next.js, TypeScript, JavaScript, HTML, CSS, Tailwind CSS
- Raspberry Pi, GPIO, I2C, PID Control, Computer Vision
- Microsoft Power Platform (Power Apps, Power Automate, Power BI), Microsoft Office

CERTIFICATIONS

- Hong Kong Green Card (Construction Industry Safety Training) *Valid until March 2028*
- Hong Kong Blue Card (Shipboard Cargo Handling Basic Safety Training) *Valid until January 2028*

Portfolio site: https://mushfique-portfolio.vercel.app