TAKUYA BOEHRINGER

LinkedIn • Google Scholar • Portfolio
tlb2160@columbia.edu

MS Mechanical Engineering student at Columbia University. Specialized in robotics and machine learning. British and Canadian.

EDUCATION

MS Mechanical Engineering (Robotics and Control Track) - Columbia University August 2025 - Present

MEng Computer Science (Robotics Minor) - University College London (UCL) - 2:1 Sep 2021 - June 2025

PUBLICATIONS

[Conference Paper] IEEE International Conference on Automation Science and Engineering (CASE)
First Author
Immersive Teleoperation Framework for Locomanipulation Tasks

[Journal Paper] Scientific Reports (Nature)
Second Author
Analyzing Spatio-temporal Dynamics of Dissolved Oxygen for the River Thames using Superstatistical Methods and Machine Learning

WORK EXPERIENCE

Summer Researcher - UCL - (Robot Perception and Learning Lab) May - Sept 2024

- Collaborated with **Prof Dimitrios Kanoulas** to have my paper accepted by the **IEEE International Conference on Automation Science and Engineering (CASE)**.
- Presented the paper live at **CASE 2025** in **Los Angeles**.
- Developed a framework for VR robotic teleoperation for locomanipulation tasks.
- Used **Unity** to develop the interface for the **Meta Quest 2**, integrating **ROS** and **Gaussian Splatting** into the pipeline.

Software Engineering Intern - Leonardo - (Electronic Warfare) July - Aug 2023

- Worked on a classified project in the **Electronic Warfare** division.
- Used C++ for **embedded linux programming** and to interface with firmware.
- Programmed in C# to create a **WPF user interface** and **socket programming** to interact with embedded devices.

PROJECTS

Columbia Autonomous Racing Team Oct 2025 - Present

- Currently working on **state estimation**, taking parameters from the racecar's perception systems and using bayesian filtering to output the relative position of the car on the track, sending the output data to the car's control systems.
- Also using **ROS** and **C++** to integrate all subsystems in the software stack.

Robot Studio Project Sept 2025 - Dec 2025

- Designed, built and programmed a robot of my own design for the Robotic Studio class by **Prof Hod Lipson**.
- Built two **Klann linkages** for an eight-legged locomotion.
- Trained it to crab walk via simulation in **MuJoCo** using various optimization algorithms and **reinforcement learning**.
- Fed **IMU** data through a Madgwick filter to a **PID controller** to make it self-balance.

UKSEDS - Olympus Rover Trials 2024 Oct 2023 - July 2024

- Worked as a part of the UCL team in the **UKSEDS Olympus Rover Trials**.
- Developed software for the locomotion, navigation and odometry of the Mars rover using **ROS**.
- Won the award for **best CDR**.

Industrial eXchange Network (IXN) Programme - MotionInput 3.0 Oct 2022 - May 2023

- Lead a team developing **glassless VR** for gaming and endoscopic surgery.
- Implemented **stereoscopic 3D** images on 2D displays using **head tracking** and **disparity maps**.
- Partnered with **Intel**, **Microsoft**, **Sony** and the **WEISS** robotic surgery centre.

SKILLS

Programming Languages: ***Python, C, C++, C#, MATLAB***

Machine Learning: ***Supervised Learning, Unsupervised Learning, Deep Learning (PyTorch), Reinforcement Learning***

Electronics: ***Analog Electronics, Microcontrollers (Arduino), Schematics (KiCAD)***

Simulation: ***MuJoCo, Unity, RoboDK***

CAD - ***Fusion 360***

Other: ***ROS, Git, Linux, 3D Printing, SQL, LaTeX***