

# TAKUYA BOEHRINGER

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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**.
- Deployed the policy **sim-to-real** for testing.

### 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, Robotic Control, Sensor Fusion, Git, Linux, 3D Printing, SQL, LaTeX*