Luke Edgecombe

Robotics and Machine Learning Engineer

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About Me

Robotics and machine learning engineer with a background in biomedical and mechanical systems. Currently pursuing an MSc in Robotics with Industrial Application at Heriot-Watt University, focusing on AI for control of soft robotics. Experienced with machine learning pipelines, CUDA-based neural network tuning, and control system design. Highly motivated to contribute to real-world robotics applications through innovative, data-driven solutions.

Education

2025–2027 **MSc Robotics with Industrial Application**, *Heriot-Watt University*, Edinburgh, UK

Key Focus Areas: Control Systems, Machine Learning, Robot Kinematics, Motion Planning.

Current Project:

- Designing and implementing an MLPR (multi-layer perceptron regressor) with CUDA acceleration for real-time control of soft robotic actuators.
- Exploring inverse kinematics approximation and model tuning for compliant robotic systems.

2019–2023 **BEng Biomedical Engineering (First Class Honours)**, *University of Dundee*, Dundee, UK

Key Modules: Software Applications for Biomedical Engineering, Medical Instrumentation, Electronics and Instrumentation, Biomechanics and Biomaterials.

Honours Projects:

- Designed and 3D printed a prosthetic hand using EMG control; achieved first-class project grade.
- Collaborated with Össur on a Windows-based application for prosthetic control and patient interfacing.
- Developed a laparoscopic surgery training tool with real-time feedback (graded B).

Awards: Open Prize for Biomedical Engineering (2022) ▪ Consistent 1st-class average (Years 2-4)

Selected Projects

Soft Robotics Control (MSc)
- Developing AI-driven control for soft robotic actuators using PyTorch and CUDA-accelerated MLPR.
- Implementing inverse kinematics prediction model; paper in preparation with King's College London.

Automated Endo-Robotic Solution (Undergraduate)
- Team project designing an automated system for minimally invasive tasks.
- Responsible for mechanical design, ML integration, and sensor calibration.

Upper Limb Prosthesis (Össur Collaboration)
- Designed the mechanical housing and contributed to GUI development for EMG-based prosthesis.
- Improved signal reliability and patient comfort through ergonomic design.

Technical Skills

Programming	Python, C++, MATLAB
Machine Learning	PyTorch, scikit-learn, CUDA optimisation, data preprocessing, Ray Tune
Robotics	Kinematics, Control (PID/LQR), ROS, simulation
Design Tools	SolidWorks (CSWA certified), Autodesk Inventor, KiCad
Other Tools	Git, Linux, LaTeX, VS Code
Lab Skills	Instrumentation, signal analysis, system integration

Experience

2022–2023 **Class Representative**, *University of Dundee*, Dundee, UK
- Acted as liaison between students and faculty to improve course delivery.
- Led feedback sessions and collaborated with staff to resolve academic issues.

2018–2023 **Seasonal Roles – Hospitality & Events**, *Underbelly & Assembly, Edinburgh Fringe*, Edinburgh, UK
- Worked in box offices, bars, and front-of-house roles across multiple summers.
- Developed teamwork, customer service, and organisational skills in fast-paced environments.

2016–2018 **Paper Delivery Assistant**, *Local Distribution*, Dundee, UK
- Managed early-morning routes; demonstrated reliability and independence.

Volunteering & Societies

STEM Ambassador — Created educational resources for schools as part of the Ingenious Project to promote pathways into engineering.

Mountaineering Club — Progressed from participant to instructor; led weekend expeditions focusing on safety and teamwork.

Engineering Society — Organised workshops and project sessions to engage students in robotics applications.

Certificates & Awards

2023 CSWA – Certified SolidWorks Associate

2022 Open Prize for Biomedical Engineering, University of Dundee

2022 Certificate of Recognition – School of Science and Engineering

2021 First Aid at Work (Ofqual Level 3)

Interests

Mountain biking, bouldering, hiking ▪ Reading and model kit building ▪ Travel across Europe and outdoors exploration.