Luke Edgecombe

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About Me

Robotics and machine learning engineer with a background in biomedical and mechanical systems. Currently studying for an MSc in **Robotics with Industrial Application** at Heriot-Watt University (expected 2027). Skilled in neural network modelling, control systems, and CUDA optimisation for real-time robotics. Passionate about using data-driven methods to solve complex engineering problems and eager to apply my skills during a six-month industry placement.

Education

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

- Focus: control systems, robot kinematics, machine learning, motion planning.
- Project: designing an MLP regressor with CUDA acceleration for soft robotic control.
- Research: investigating inverse kinematics prediction; preparing a publication with King's College London.

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

- Key Modules: Software Applications for Biomedical Engineering, Medical Instrumentation, Electronics and Instrumentation, Biomechanics and Biomaterials.
- Final-year projects:
  - Designed a 3D-printed EMG prosthetic hand (A grade).
  - Collaborated with Össur on prosthetic control software and interface design.
  - Built a laparoscopic surgical training system with interactive feedback (B grade).
- **Awards:** Open Prize for Biomedical Engineering (2022); School of Science and Engineering Certificate of Recognition.

Selected Projects

Soft Robotics Control with Machine Learning *MSc Project, Ongoing*
Developing AI-driven control for soft robotic actuators using PyTorch and CUDA.

- Implemented a multi-layer perceptron regressor for real-time soft actuator control.
- Tuned model performance using CUDA acceleration and Ray Tune hyperparameter optimisation.

Automated Endo-Robotic Solution *Undergraduate Project*

- Designed an automated platform for endoscopic operations with integrated ML sensor control.

- Responsible for mechanical design, calibration, and embedded software.

Upper Limb Prosthesis (Össur Collaboration) *Industry-led Project*

- Contributed to prosthetic design and user-interface development for an upper-limb prosthesis.
- Improved ergonomic layout and optimised sensor placement for comfort and usability.

Technical Skills

Programming:	Python, C++, MATLAB
Machine Learning:	PyTorch, scikit-learn, CUDA, Ray Tune, data processing
Robotics:	Control Systems (PID/LQR), ROS, kinematics, simulation
Design & CAD:	SolidWorks (CSWA), Autodesk Inventor, 3D printing
Other Tools:	Git, Linux, LaTeX, VS Code, signal analysis

Experience

Class Representative – University of Dundee *2022–2023*

- Acted as liaison between students and staff to improve teaching and coursework structure.
- Presented feedback to faculty and coordinated student engagement initiatives.

Hospitality & Events – Edinburgh Fringe (Underbelly, Assembly) *2018–2023*

- Box office, bar, and front-of-house roles across multiple summers.
- Developed communication, time management, and teamwork skills in high-pressure settings.

Volunteering & Activities

STEM Ambassador – University of Dundee Ingenious Project

- Created resources and workshops to promote pathways into engineering for school students.

Mountaineering and Outdoor Activities

- Member of university mountaineering and mountain biking clubs.
- Led group climbs and expeditions; developed safety awareness and planning skills.

Certificates & Awards

- CSWA – Certified SolidWorks Associate (2023)
- Open Prize for Biomedical Engineering (2022)
- Certificate of Recognition – School of Science and Engineering (2022)
- First Aid at Work (Ofqual Level 3)

Interests

Mountain biking, bouldering, hiking, mechanical prototyping, and exploring modern robotics design and AI control.