Luke Edgecombe

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About Me

Robotics and machine-learning engineer with a background in biomedical engineering. I am currently studying for an **MSc in Robotics with Industrial Application** at Heriot-Watt University (expected 2027), focusing on end-to-end IoT systems, machine-learning theory, ROS programming and robot kinematics. My undergraduate thesis investigated automatic hyperparameter optimisation of an MLP regressor for a prototype soft medical robot. I am seeking a six-month industry placement where I can apply machine-learning and control skills to real robotic systems.

Education

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

- Current modules: End-to-end IoT systems for robotics, machine-learning theory, ROS programming, robot kinematics.
- Building applied skills in robotics software stacks.

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 thesis (main project):** Designed and implemented automatic hyperparameter optimisation for an MLP regressor to control a prototype soft medical robotic system.
- Other undergraduate projects:
  - **Össur (industry-linked):** contributed to mechanical design and user-facing application work for an upper-limb prosthesis.
  - **Automated endo-robotic solution:** team project on an automated platform for endoscopic/minimally invasive tasks.
  - **3D-printed EMG prosthetic hand:** design and build of a functional prosthetic with limited materials.
  - **Laparoscopic training tool:** interactive system providing user feedback.
- **Award:** Open Prize for Biomedical Engineering (2022) *(also issued as School of Science and Engineering Certificate of Recognition)*.

Selected Projects

Automatic HPO for MLP Regressor in Soft Medical Robotics *Degree Thesis*

- Implemented an MLP regressor mapping position inputs to actuation outputs for a soft-medical-robot prototype.
- Designed and evaluated an automatic hyperparameter-optimisation pipeline that improved model accuracy and training efficiency under limited-data conditions.
- Addressed real-world constraints including non-linear kinematics and small datasets.

Össur Upper-Limb Prosthesis (Industry-linked) *Undergraduate project*

- Contributed to mechanical design and user-application development for an upper-limb prosthesis.
- Focused on streamlining the mechatronic development process and improving patient interaction.

Automated Endo-Robotic Solution *Undergraduate team project*

- Developed an automated robotic solution for minimally invasive tasks.

- Led mechanical design choices and handled calibration and sensor integration.

3D-Printed EMG Prosthetic Hand

- Designed and manufactured a low-cost prosthetic hand controlled using EMG signals.
- Demonstrated practical application of biomedical-engineering and mechatronics principles.

Technical Skills

Programming:	Python, C++ (Arduino), C#, MATLAB
ML / Data:	PyTorch, Scikit-learn, hyperparameter optimisation, data processing
Robotics:	ROS, kinematics, control systems (PID), IoT
Design & CAD:	SolidWorks (CSWA), Autodesk Inventor, 3D printing
Other Tools:	Git, Linux, LaTeX, VS Code

Experience

Class Representative – University of Dundee 2022–2023

- Liaised between students and faculty to improve the delivery and organisation of engineering modules.
- Collected and communicated student feedback, and helped resolve course-related concerns.

Hospitality & Events – Edinburgh Fringe (Underbelly, Assembly) and Various Restaurants 2018–2023

- Performed box-office, FOH, kitchen, and bar roles in high-pressure, time-sensitive environments.
- Developed strong teamwork, communication and reliability under peak demand.

Volunteering & Activities

Retail Volunteer – Oxfam Shop 1 year (during school)

- Assisted with stock management, customer service and daily shop operations.
- Developed teamwork and responsibility in a customer-facing environment.

STEM Ambassador – University of Dundee Ingenious Project

- Produced outreach materials to promote engineering and STEM pathways to school pupils.

Mountaineering & Outdoor Clubs

- Active member of mountaineering and mountain-biking societies.
- Planned and led trips, emphasising safety, risk assessment and team communication.

Certificates & Awards

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

Interests

Mountain and road biking, electronics, bouldering, rope climbing and winter mountaineering.