RUARIDH MURDOCH

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Second-year MEng Design Engineering student at Imperial College London, specialising in integrated mechanical, electronic, and software systems. I design and build engineering projects from research and problem framing through to prototyping and testing, with a user-focused approach and a drive to deliver practical, well-engineered solutions to real-world problems.

EDUCATION

Imperial College London - MEng Design Engineering, 2024 - 2028
73% (Year 1), 81% current average (Year 2)
Modules: Physical Computing, Electronics & Sensors, Solid Mechanics, Product Design Engineering, Human-Centred Design

The Glasgow Academy - Scottish Advanced Highers, 2023 - 2024
Maths (A), Physics (A), Computing (B)

KEY PROJECTS

Teach-by-Touch Robotic Arm - Physical Computing, 2025
- Built a robotic arm you teach by touch: physically move the joints by hand to record a motion sequence, insert a cartridge to save it, and press play to repeat it - no programming required
- Designed all mechanical joints from scratch using DC motors and custom 3D-printed gear reductions with potentiometer feedback, avoiding off-the-shelf servos to keep the design resourceful and manufacturable
- Wrote all embedded firmware to capture, store, and replay joint motion sequences, enabling multiple independent motion sequences to be stored, swapped, and replayed without reprogramming
- Diagnosed and resolved gear stalling under load through iterative mechanical redesign, increasing the shoulder reduction ratio and reinforcing gear teeth to eliminate slipping under backdrive

Aerodynamic Cabriolet Design - Thermofluids, 2025
- Designed a four-seat cabriolet body from concept through CFD in Ansys Workbench, shaping the windshield, cabin, and rear body to control airflow and reduce wake drag
- Refined the design iteratively through simulation, cutting drag force by 14% from the initial concept
- 3D printed the final design at scale and validated it experimentally in a wind tunnel, comparing physical results against CFD predictions

Designing for Comfort in Long-Haul Aircraft - Sustainable Design Engineering, 2025
- Conducted a 122-person passenger survey, benchmarked major seat manufacturers, and performed a physical teardown of an aircraft seat to identify where current designs fail
- Mapped the full stakeholder system - passengers, cabin crew, maintenance, procurement, and regulators - identifying the cushion-passenger interface as the point where comfort, maintenance cost, and end-of-life impact all converge and therefore the highest-leverage target for redesign
- Proposed a modular seat redesign with adjustable geometry to fit a wider range of body types, using separable soft goods to make targeted replacement easier and reduce waste

Duck Sauce Game Jam - Personal Project, 2023, 2024
- Won first place in back-to-back years of this annual 48-hour game jam, leading game design and programming in Unity and C# to ship fully playable original games under time pressure

KEY SKILLS

Electronics & Embedded: Arduino (C++), MicroPython, ESP32, circuit design, DC motor control, finite state machine design

CAD & Mechanical: Fusion 360, technical drawing, tolerance and fit design, gear and mechanism design, 3D printing, prototyping

Software & Simulation: Python, C#, MATLAB, CFD and FEA in Ansys Workbench (Fluent, Mechanical)

Design & Research: User research, survey design, journey mapping, stakeholder mapping, concept sketching, lifecycle and materials analysis, Figma, UI design

EXPERIENCE

Undergraduate Teaching Assistant - Imperial College London, Oct 2025 - Present
- Mentor over 90 first-year Design Engineering students weekly, supporting coursework spanning maths, mechanics, materials, computing, and design

AI Model Trainer - DataAnnotation, Remote, Jul 2025 - Present
- Assessed and annotated AI model outputs across reasoning, mathematics, and programming, identifying failure modes and edge cases to improve model accuracy and robustness

Volunteer Mechanic - Recyke-A-Bike, Stirling, 2023 - 2024
- Diagnosed faults and carried out full mechanical repairs on donated bicycles for community redistribution, working independently across drivetrains, brakes, and structural components

Student Mentor - Coding Club, The Glasgow Academy, 2022 - 2023
- Led coding sessions for secondary school students, breaking down programming concepts and guiding problem-solving in a classroom environment

INTERESTS

Climbing & Outdoor Pursuits: NIBAS and NICAS certified lead climber, former Glasgow Youth Squad competitor, completed the Lakeland Mountain Marathon

Sailing: RYA Day Skipper certified, sailed Scottish coastal waters independently