JOSHUA HAYDON ROWE
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EDUCATION
UNIVERSITY OF EDINBURGH, UK, BEng (hons) in Chemical Engineering, 4th year; 2021-2025; 3.7 GPA

- Direct entry to second year (finished 2nd year age 18); Access Edinburgh scholarship.
- Founder and president of Engineers Without Borders Edinburgh chapter (January 2025).

UNIVERSITY OF CALIFORNIA, BERKELEY, United States, Junior Exchange Student; 2022-2023; 3.52 GPA

- Only selected applicant from the Edinburgh School of Engineering to participate in the year abroad at UC Berkeley.
- Enrolled in 5 out of all 8 upper division Chemical Engineering classes this academic year, without pre-requisites.
- Formula Electric Club – packed HV batteries into segments; designed potential ethylene glycol – water cooling system; wrote a manual on how to safely construct segments for safety and to avoid future issues.
- Took introduction to data science course (data 8) for no credit.

RELEVANT MODULES: Thermodynamics | Separation Processes | Statistical Methods
Dynamics & Control of Processes | Advanced Fluid Mechanics | Transport Phenomena
Biochemical Engineering | Kinetics & Reaction Engineering | Organic Chemistry

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PROJECTS
1. Can Passenger Flight be Carbon Neutral by 2030? — a 6000-word grade A dissertation
   - Original research exploring fuel efficiencies of past aircraft, energy density and cost-benefit analysis of alternative fuels for cleaner flight including biofuels, electrofuels, batteries and hydrogen fuel cells.
   - Learnt efficient research skills, succinct writing, and deepened knowledge on novel fuel technologies.
2. Extracting Lithium from the Salton Sea – a grade A project
   - Performed a literature review; designed an original process from start to finish; modelled in Aspen Plus achieving 95% efficiency; extensive economic and environmental analysis.
3. Presented a start-up with an MVP to a panel of VC's aiming to reduce carbon emissions of grocery shopping.
   - Designed an app in Android Studio to calculate carbon emissions from the supply chain of groceries.

WORK EXPERIENCE

University of Edinburgh, UK — Perdomo Lab Undergraduate Researcher – September 2024 – present

- Implemented Python scripts to assess ionic liquid (IL) prediction models against experimental carbon capture data.
- 25-page literature review on the state-of-the-art of task-specific ILs for pre- and post-combustion carbon capture.

Tesla, Fremont, United States — Cell Cathode Engineering Intern – October 2023 – February 2024

- Design, procurement, assembly, testing, installation, SOP and operator training for pressurised filtration column leading to 30x faster sampling process.
- Created and executed a DOE to characterize the novel cathode specific cake resistance.
- Wrote a Python script to provide a foundation for storage of pilot operating data.
- Technical lead for pilot plant - responsible for delegating task lists and answering operator questions.

Yale University, New Haven, United States — Elimelech Lab Undergraduate Researcher – June 2023 – August 2023

- Synthesized & used SEM to image Metal Organic Frameworks (MOFs) determining quality and structure.
- Performed Isothermal Calorimetry to calculate the binding energy between cations and functionalized MOFs.
- Wrote a Python script to determine energy barriers from 42 models of ion transport through membrane pores.
- Presented research to the lab group.

Walking on Waves, Devon, United Kingdom — Surf instructor - August 2021 – August 2021

- Achieved client satisfaction teaching people of all ages/abilities fundamentals of surfing and safety in the sea.
- Completed beach lifeguard and surf instructor qualifications learning communication techniques and First aid.

SKILLS AND INTERESTS
Languages: English (native), French (intermediate)
Main interests:
- Energy storage, renewable/sustainable technologies, problem-solving and working in teams to achieve common goals such as in labs.
- Rowing (7th in UK Nationals 2019), Percussion ensemble (4 years), Engineers rugby team, Captain of IM soccer team, beach lifeguard and surf instructor qualifications.

Main skills:
- Proficiency in Python, MATLAB, SIMULINK, Aspen Plus, Excel, SOLIDWORKS, AUTOCAD, UniSim.
- UPenn ESG & Climate change course: analysis of investment shifts to obtain a zero-carbon economy.