DAIRE JOSEPH O'SULLIVAN

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PERSONAL STATEMENT

Aerospace engineer with experience in the design and testing of solid and hybrid rocket propulsion systems, including testing infrastructure design and authoring test plans. Recently completed MSc thesis on liquid engine test stand. Strong organisational and teamworking skills demonstrated through leadership of multiple student rocketry teams. Excited to increase access to space through the development of new propulsion systems.

KEY ACHIEVEMENTS

- Co-founded Irelands first student rocketry team, ULAS HiPR, to compete in international rocketry competitions (Mach-X and EUROC, 2024).
- Co-project managed a team to develop and test a 2kN nitrous/HDPE hybrid engine (CranSEDS 2024-2025).

EDUCATION

MSc Thermal Power and Propulsion Gas Turbine Technology Option, Cranfield University, Cranfield, UK **October 2024 - September 2025**
Final Grade: 72%
Relevant Modules: Space Propulsion, Combustors, Turbomachinery and Blade Cooling, Mechanical Design of Turbomachinery, Gas Turbine Performance, Simulation and Diagnostics.
Individual Research Project: Preliminary Design of a Mobile Rocket Test Platform on a Trailer.

BEng Aeronautical Engineering, University of Limerick, Limerick, Ireland **September 2020 - August 2024**
Final Grade: 2.1
Relevant Modules: Fluid Mechanics 1, Aerodynamics 1, Thermodynamics 1, Aircraft and Spacecraft Systems, Applied Mechanics, Aerospace Vibrations, Aircraft Flight Dynamics and Simulation, Flight Mechanics, Aerospace Structures, Boundary Layer Theory, Aircraft Conceptual Design, Propulsion Systems.
Final Year Project: An Investigation of Three Supersonic Wings at Mach 2, 3 and 5.

CAREER HISTORY

Destinus, Payerne, Switzerland: Propulsion Test Engineering Trainee **October 2025 - Current**
Scalable cost-asymmetric strike and air defence systems for high-intensity modern conflict.

- Wrote and took ownership of test plans and test procedures for solid rocket motor test campaigns.
- Conducted hydrostatic pressure tests to validate hardware design.
- Supported test campaign execution, including motor assembly, test stand integration, and DAQ system configuration.
- Coordinated with the propulsion design team to implement learnings from testing for iterative designs.
- Designed and implemented improvements and upgrades to the testing infrastructure including component selection and commissioning procedures.
- Worked on propellant formulation and authored test plans to downselect.

ABEC, Fermoy, Ireland: Disposable Container Engineering Intern **May 2024 - September 2024**
A leader in delivering customized single-use, stainless steel and services for manufacturing in the biopharmaceutical industry.

- Oversaw standardisation of PVC pipes used to build the frames in which disposable containers are shipped in by working closely with experienced technicians and engineers to create a new design. This project reduced the number of unique frame designs from over 20 to just 5.
- Developed, prototyped and implemented a new cutting tool for PVC pipes, consulted with technicians and used Inventor 3D and 3D printing to produce a new clamp, hereby improved technician safety and increased the number of pipes cut in an hour from 15 to 45.
- Tested and validated Oetiker clamps for use on single-use containers. Worked with two experienced engineers to accelerate their use in production by 2 weeks.
- Installed a new plastic welder in the cleanroom which enabled production to begin on an additional bench.

Rockwell Engineering, Cork, Ireland: Engineering Intern **May 2023 - August 2023**

Specialists in the design, fabrication, installation and maintenance of HVAC and utility pipework for large-scale, complex biopharma facilities.

- Designed mechanical assemblies for use in microchip fabrication facility using AutoCAD Plant3D. Liaised with engineers across different companies to coordinate placement of pipes.
- Created engineering drawings for exhaust gas hood for pharmaceutical plant.

Rockwell Engineering, Cork, Ireland: Cooperative Education Engineering Student **May 2022 – January 2023**

- Inspected CAD models and engineering drawings using Navisworks and AutoCAD Plant3D before sending to workshop which supported the engineering team of 8.
- Worked with Quantity Surveyor to generate Bills of Materials using Microsoft Excel.
- Solely responsible for the design of a sound cancelling enclosure for a pump. Worked with experienced welding technicians to ensure a viable design.

ACADEMIC PROJECTS

BEng Final Year Project*:* An Investigation of Three Supersonic Wings at Mach 2, 3 and 5

- Employed Siemens StarCCM+ in the investigation of supersonic wings. Investigated the impact of planform, chord, angle of attack and Mach number on the aerodynamic performance of a wing.
- Conducted extensive literature review and validated simulation using available NACA wind tunnel data.
- Found that CFD aligned with linear theory when using steady laminar flow models.

MSc Individual Research Project: Preliminary Design of a Mobile Rocket Test Platform on a Trailer

- Designed structure and fluid system of a test stand rated for 10kN of thrust that will enable testing of liquid, solid and hybrid rocket systems at Cranfield University.
- Used Siemens FEMAP to simulate the structural response of the test stand to thrust loads.
- Developed a methodology to select fluid components for a given thrust and oxidiser to fuel ratio.
- Specified fluid components (valves,piping, pressure regulators,tanks), P&ID and delivered technical drawings of the test stand.

SKILLS & INTERESTS

- **Languages:** Native English speaker with basic level of French.
- **Technical Software:** Experienced with Microsoft Word, Excel, PowerPoint and Outlook, SolidWorks, AutoCad, Siemens StarCCM+ and has a sound knowledge of Python, Matlab, Rocket Propulsion Analysis (RPA), Siemens NX and Femap.
- **Individual Interests:** Running (3000m & 1500m All-Ireland Champion as a teenager), fixing old cars(Toyotas in particular) and movies(my favourite is Bladerunner 2049).
- **Memberships:** Tripoli Rocketry Association and Space Generation Advisory Council NPOC for Ireland.

EXTRACURRICULAR ACTIVITIES

CranSEDS Race2Space Hybrid Propulsion Team: Co-Project Manager **November 2024 – September 2025**

- Led a team of 10 in the development of a 2000N thrust N20/HDPE hybrid rocket motor
- Coordinated with CranSEDS High Powered Rocketry team for integration into launch vehicle.

UL Aeronautical Society: Co-founder, Treasurer, Chairperson, Rocketry Officer **November 2021 – September 2024**

- Co-founded the University of Limerick Aeronautical Society in 2021 and served as Treasurer during its first year of operation. Oversaw the growth of the society to over 50 members.
- Awarded Best New Society of the Year 22/23 during tenure as Chairperson.
- Co-founded and led high-powered rocketry sub team, **ULAS HiPR** during tenure as Rocketry Officer in Academic Year 23/24.
- Spearheaded the design of UL Aeronautical Society's first high-powered rocket with an apogee of 1500m and organised travel abroad to International Rocketry Week for 6 students.
- Led the first Irish student team to Mach-24 and supervised the design of all elements of the rocket.
- Led a team of 15 to compete at EUROC 2024.

Tripoli L1 High Powered Rocketry Certification **August 2024**

- Designed and launched a rocket to 1000m, flying on a motor with a peak thrust of 127.5 Newtons.

ESA Education Courses **March 2023 and September 2022**

- Built a radiosonde balloon that reached an altitude of 27400m and launched a sounding rocket at Andøya Spaceport as part of **ESA Fly a Rocket! 2023.**
- Gained a comprehensive overview of spacecraft subsystems and operations at **ESA Ladybird Guide to Spacecraft Operations 2022.**