

# DAIRE JOSEPH O'SULLIVAN

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## PERSONAL STATEMENT

Passionate aerospace engineer currently completing an MSc in Thermal Power and Propulsion at Cranfield University. Currently working on a hybrid rocket engine and a mobile rocket test stand. Strong organisational and teamworking skills demonstrated through leadership of multiple student rocketry teams. Skilled with Solidworks and StarCCM+ CFD software with a working knowledge of Python, MatLab, Femap and Amesim. Excited to contribute to the development of propulsion systems.

## KEY ACHIEVEMENTS

- Awarded Best New Society of the Year 22/23 during tenure as Chairperson of Aeronautical Society (University of Limerick, 2023).
- Achieved A2 grade in BEng Final Year Project (University of Limerick, 2024).
- Co-founded Irelands first student rocketry team, ULAS HiPR, to compete in an international rocketry competition (Mach-X, 2024).
- Co-project managing 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**

**Relevant Modules:** Space Propulsion, Combustors, Turbomachinery and Blade Cooling, Mechanical Design of Turbomachinery, Gas Turbine Performance, Simulation and Diagnostics.

**Individual Research Project:** Design and development of a Rocket Test Facility on a Mobile Trailer Platform.

**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.

## CAREER HISTORY

**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 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 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: Design and development of a rocket test facility on a mobile trailer platform**

- Designing structure and fluid system of a test stand rated for 10kN of thrust that will enable rocket propulsion research at Cranfield University.
- Targeting construction and series of test fires by summer 2025 that will validate design.

**SKILLS & INTERESTS**

- **Languages:** Native English speaker with basic level of French. I am willing to learn any new language.
- **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) and Siemens 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:** Member of UKSEDS, CranSEDS, Tripoli Rocketry Association and Royal Aeronautical Society.

**EXTRACURRICULAR ACTIVITIES**

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

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

**European Rocketry Challenge 2024: Airframe Team Lead and Co-Project Manager** **May 2024 – October 2024**

- Oversaw a 4-man team in design of the structure for a rocket with an expected apogee of 3000m.
- Managed a team of 15 both virtually and in-person.

**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.

**Sionna High Powered Rocketry Projects: Team Lead** **October 2022 – August 2024**

- 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.

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

- Independently designed rocket using OpenRocket simulation software and SolidWorks CAD.
- Successfully launched rocket to 1000m, flying on a motor with a peak thrust of 127.5 Newtons.
- Awarded Tripoli L1 High Powered Rocketry Certification.

**Mach-24 Rocketry Competition: Team Lead** **November 2023 – July 2025**

- Led first Irish student team of 12 to international rocketry competition and supervised the design of all elements of the rocket.
- Fundraised over €1000 in sponsorship. Liaised with sponsors, university and competition organisers.

**ESA Fly a Rocket! 2023: Sensor Experiments Sub-Team** **March 2023**

- Completed online theoretical course on rocketry and attended launch campaign in Andøya Spaceport.
- Worked within a team of 5 to build a radiosonde balloon that reached an altitude of 27400m.

**ESA Ladybird Guide to Spacecraft Operations 2022** **September 2022**

- Gained a comprehensive overview of spacecraft subsystems and operations and took part in team simulation exercise.