Nathanael Jenkins **MEng ACGI**

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Education

PhD in Aeronautics and Astronautics (Ongoing) 2024 -
Massachusetts Institute of Technology, Cambridge (USA)

MEng Aeronautical Engineering with a Year Abroad (1st class honors) 2020-2024
Imperial College London, Massachusetts Institute of Technology (final year)

- Overall grade: 80%. Awarded the BAE Systems Prize for the best individual research project.
- Sponsored by the Institution of Mechanical Engineers (IMechE) 'James Clayton' Undergraduate Scholarship

A-Levels in Maths, Further Maths, Physics, Product Design (A*, A*, A*, A*) 2018-2020
Peter Symonds' College, Winchester

- Authored a grade A* extended project qualification on the future of ion propulsion for air and space transport

Experience

Student Partner 10/2024 -
Giant Ventures, London (UK)

- Identifying and referring exceptional ventures to a global firm focused on technology, health, and climate

Graduate Student, Aeronautics and Astronautics 08/2024 -
Massachusetts Institute of Technology, Cambridge (USA)

- Developing physics-based simulation tools for lightning strikes to aircraft and wind turbines
- Collaborate with industry partners through conferences and participation in international standards committees

Summer Intern, Simulation & Modeling 06/2022 - 08/2022
MBDA Missile Systems, Stevenage (UK)

- Evaluated and implemented an alternative programming paradigm in a high-fidelity dynamic model
- Identified a solution to a long-term project which protected company IP while meeting client requirements
- Verified change sets, utilizing more than 2,000 core-hours on an industrial high-performance cluster

Undergraduate Researcher (UROP) 06/2021 - 08/2021
Imperial College London, Dr Sylvain Laizet (Supervisor)

- Implemented and profiled a novel C++ framework for high-performance heterogeneous computing

Lead Aerodynamics and Simulations Engineer 10/2020 - 08/2023
Imperial College London Rocketry, Altitude Record Team

- Conducted computational fluid dynamics (CFD) studies on high-powered supersonic rockets using StarCCM+
- Negotiated sponsorship with ESTECO, acquiring licenses to modeFrontier optimization software
- Integrated modeFrontier into engineering workflows, increasing rocket altitude by 3% and breaking a UK record

Duty Manager 03/2020 - 01/2021
The Food Warehouse, Basingstoke

F1inSchools Alumnus, Judge, and Event Volunteer 2017 -

Publications

Jenkins N A, Guerra-Garcia C. **Physics-Based Zoning of Unconventional Aircraft: The Swept Stroke Phase.** International Conference on Lightning and Static Electricity (ICOLSE). September 2024. Campinas, Brazil. DOI: 10.5281/zenodo.13838313

[Under review] Jenkins N A, Guerra-Garcia C. **Numerical Simulation of the Lightning Swept Stroke: Application to the Results from the NASA Storm Hazards Program.** *Expected release in late 2024.*

Portfolio

Numerical Simulation of the Lightning Swept Stroke for the Zoning of Unconventional Aircraft 2024
https://nathanaelj.github.io/PrivateSamples/Thesis.pdf

- Developed a computational analysis tool for identifying lightning protection zones on arbitrary aircraft geometries
- Delivered findings to sponsors at the Boeing Company, as well as industry experts through conferences and standards committee meetings.

Space HAVEN: Aerothermodynamic Analysis of a Hypersonic Rocket Nosecone 2023
https://nathanaelj.github.io/Projects/AcademicResources/GDP_Report.pdf

- Evaluated rocket nosecone designs using commercial CFD software (StarCCM+) and analytical methods
- Implemented adaptive mesh refinement for accurate modeling of hypersonic shocks

UROP: GPU Parallelization of a 2D Navier-Stokes Solver 2021
https://nathanaelj.github.io/Projects/AcademicResources/UROP_Report.pdf

- Self-taught Fortran and C++ and parallelized software using OpenMP and Khronos hipSYCL
- Evaluated program performance using Intel oneAPI toolkit and compared SYCL framework to alternative means of heterogeneous parallelism

Extended Project: Ion Propulsion for Air and Space Transport 2019
https://nathanaelj.github.io/Projects/AcademicResources/EPQ.pdf

- Evaluated emerging and established technology to evaluate future potential of ionic propulsion systems
- Organized a visit to QinetiQ vacuum test facilities while investigating space-based ion propulsion systems

Awards

Graduate Fellowship 2024
MIT School of Engineering

BAE Systems Prize 2024
Imperial College Dept. of Aeronautics, best individual research project

Aeronautics Scholar 2022
Imperial College Dept. of Aeronautics

Dean's List 2021, 2022, 2023, 2024
Imperial College Dept. of Aeronautics, top 10% of cohort

James Clayton Undergraduate Scholarship 2020 - 2024
Institution of Mechanical Engineers

Arkwright Scholar 2018
The Smallpeice Trust