

# JAMES PARRY

Aerothermal Engineer

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## PROFILE

Driven aerothermal engineer with experience in numerical modelling and software development for turbulent flows and conjugate heat transfer with application in the aerospace industry. Design, analysis and optimisation capabilities with experience in the construction and testing of propulsion systems for eVTOL aircraft and UAS in both industry and academia. Research and programming skills in developing, validating and optimising open-source software to inform the design of next-gen gas turbines. Experienced at analysing and communicating results, with the ability to work in a multidisciplinary team to deliver industrially relevant projects.

## SKILLS

<b>Software:</b>	C++/C, Python, MATLAB, Simulink, FORTRAN, SQL	<b>CAD:</b>	NX, Solid Edge, Autodesk Inventor, SpaceClaim, CATIA
<b>CFD:</b>	OpenFOAM, Star-CCM+, ANSYS CFX, ANSYS Fluent	<b>Meshing:</b>	Star-CCM+ Meshing, ANSYS ICEM, blockMesh, Gmsh
<b>Analysis:</b>	ParaView, Tecplot, Python	<b>OS/HPC:</b>	Linux (Shell), Windows, AWS, Git

## EXPERIENCE

- 2024 – Present **Aerothermal Engineer** **SkyBridge U.K. - London**
- Aerothermal and **propulsion design lead** within the Flight Physics team on the design of an eVTOL aircraft for logistics and urban air mobility.
  - Designed high-lift propellers for VTOL and cruise **electric propulsion** configurations using in-house software. Developed **test programs** and undertook wind tunnel tests for assessing unit performance.
  - Developed **CHT-CFD** and reduced order physics models for the **design** and **thermal performance** of key components of the aircraft propulsion system. Supported in critical design decisions and configuration selection for the overall aircraft design.
  - Programming skills developing analysis and slurm scripting tools for CFD simulations on **AWS** and version control of collaborative code and databases using **Git**.
  - Designed and integrated models for **thermal and performance** monitoring of key sub-systems into the aircraft mission simulation framework.
- 2020 – 2024 **PhD Researcher** **University of Bath - Bath**
- CFD developer** specialising in heat transfer modelling using unsteady coupled Conjugate Heat Transfer (CHT) simulations. Specialisation on the analysis of **rotating turbulent flows** with thermal interaction in gas turbine compressor cavities.
  - Industrially sponsored** research by Siemens-Energy and undertaken at the world-leading Turbomachinery Research Centre at the University of Bath.
  - Programming experience in **developing and implementing** solvers and boundary conditions for turbomachinery applications, with **optimisation for parallel architectures**. Undertook **verification and validation** of developed code through multidisciplinary approaches, collaborating with test and modelling engineers.
  - Experience **managing large datasets**, developing bespoke tools in MATLAB and Python for data analysis.
  - HPC experience** including queue management and slurm scripting. Successful applications to *EPSRC Cirrus* cluster for £35000 worth of computation time.
  - Presented** at international CFD and turbomachinery conferences. Nominated as a reviewer for the European Turbomachinery Conference and ASME Turbo. Expo.
  - Delivered presentations and **collaborated with international project partners** from Siemens-Energy and Rolls-Royce.

## Publications

- "Conjugate Modelling of a Closed Co-Rotating Compressor Cavity" - *Journal of Engineering for Gas Turbines & Power*
- "A Conjugate Heat Transfer Methodology for Rotating Buoyancy-Induced Flows in OpenFOAM" - *OpenFOAM Journal* (Forthcoming)

2020 – 2024	<b>Academic Supervisor/UAS Design Consultant</b>	<b>University of Bath - Bath</b>
	<ul style="list-style-type: none"><li>• Consulted on the development and build of several UAS as part of Team Bath Drones, including the competition team strategy. Disciplines taught included <b>project management, propulsion design, structures</b> and <b>aircraft performance</b>.</li><li>• Undertook <b>flight testing</b> for tilt-rotor UAS, supporting the avionics and testing team.</li><li>• <b>Mentored</b> five Master students as technical supervisor for MEng thesis, focusing on projects related to <b>OpenFOAM</b> applications and <b>ducted propeller design</b>.</li><li>• Prepared material and delivered lectures/tutorials for MEng and BEng courses at the University of Bath to over 200 students. Led the demonstration and assessment of BEng laboratories. Total supervision time for teaching exceeds 150 hours.</li></ul>	
2019 – 2020	<b>Propulsion Design Engineer</b>	<b>Team Bath Drones - Bath</b>
	<ul style="list-style-type: none"><li>• Lead Designer for the development of a tilt-rotor search and rescue drone, from concept through to detailed design following a <b>systems engineering</b> approach.</li><li>• Managed the GA and subsystems, with experience in <b>CAD/CAM</b> manufacture of aerodynamic components and GFRP layup.</li><li>• Led the propulsion engineering for UAS, designing and specifying the <b>electric propulsion</b> system of the aircraft, identifying and testing COTS solutions.</li><li>• Developed a <b>multi-objective BEMT code</b> in MATLAB for optimising propeller geometry at both fixed-wing and VTOL flight for a variable-pitch system.</li><li>• <b>Validation</b> of the model undertaken using wind tunnel testing of optimised propellers produced using AM techniques.</li></ul>	
2019 – 2019	<b>Additive Manufacturing Engineer</b>	<b>GKN Aerospace - Bristol</b>
	<ul style="list-style-type: none"><li>• Collaborated with the <b>Additive Manufacturing</b> (AM) team in the design, optimisation and production of key lightweight components for commercial UAS.</li><li>• Applied composite layup and AM lattice techniques for reinforcement and weight reduction. using <b>FDM and SLS</b> methods.</li></ul>	
2017 – 2018	<b>Stealth Engineer</b>	<b>QinetiQ - Farnborough</b>
	<ul style="list-style-type: none"><li>• Industrial placement within the Advanced Services &amp; Products team developing acoustic stealth technology. Led projects on composition <b>development &amp; testing</b> of underwater repair materials and QA testing of contracted companies.</li></ul>	

## EDUCATION

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2020 - 2024	<b>PhD: Aerospace Engineering</b>	<b>University of Bath - Bath</b>
	Thesis: "Development of a Coupled CHT-CFD Solver for Modelling Heat Transfer in Gas Turbines"	
2015 - 2020	<b>MEng: Aerospace Engineering - First Class Honours</b>	<b>University of Bath - Bath</b>
	Thesis: "Optimal Propeller Design for Tiltrotor Unmanned Aircraft Systems"	

## ADDITIONAL SKILLS

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- Manufacturing experience with AM (FDM, SLS, SLA), CNC Routers, Composites (GFRP)
- **Languages:** French, German, Japanese, Chinese
- Mechanical Engineering Football Captain (2019-2023)