James Clay

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SKILLS

- Technical: Aerodynamic Flow Structures, CAD, Solidworks, Fusion 360, Wind Tunnel Testing, Model Making, Data Analysis, CFD, Star-CCM+, Autodesk CFD, xfoil, JavaFoil, Vehicle Dynamics, Vehicle Engineering, Programming, MATLAB, Python, Simulink
- Non-Technical: Teamwork, Problem Solving, Confidence, Determination, Drive, Communication, Organisation, Attention to Detail, Curiosity, Resilience, Flexibility

AWARDS AND CERTIFICATIONS

- AWS Certified Cloud Practitioner (Sep. 2025)
- UKMT Maths Challenge: Intermediate Gold (2016, 2017), Senior Kangaroo (2018)
- 2016 Royal Institute of Mathematics Maths Masterclass

PROJECTS

2026 Active Aerodynamics Energy Coupling Study **Sep. 2025 – Present**

Personal Project

- Developed a simplified CFD and hybrid energy model to evaluate lap-time and energy-efficiency impacts of 2026 F1 active-aero regulations.
- Built a Python-based lap-time simulator integrating aerodynamic data with hybrid-powertrain constraints (ICE–MGU-K coupling, battery SoC tracking).
- Quantified trade-offs between drag reduction and electrical deployment.
- Presented findings via interactive Jupyter dashboard and technical briefing presentation.

Aerodynamic and Model Development of Formula Student Car **Oct. 2023 – Jun. 2024**

Group Leader and Aerodynamic Lead (4th year group design project)

- Group leader of a 5-person team.
- Created a model in MATLAB for analysing car performance over a lap.
- Intergrated the performance model into another MATLAB model for simulating the cooling of the powertrain.
- Designed a mid-car aerodynamic package which would include cooling for the powertrain whilst retaining 91% of the downforce of the previous year's design and being lower in drag.
- Main contributor to our 30-page (A3) design report and lead the group presentation and confidently defended our work in front of academics, peers, and stakeholders.

Analysis of 2021 and 2022 Formula One Aerodynamics – Uni of Southampton **Oct. 2022 – Jun. 2023**

Individual Project (3rd year dissertation)

- Individual project.
- Analysed the effect of the 2022 F1 technical regulation changes.
- Prepared CAD models using Fusion 360 for testing in Star-CCM+ to generate my data using CFD.
- Created a complete data set which could be used to analyse the airflow around the 2 car models.
- Used MS Office to create a clear and concise report for my examiners and future research as well as a poster to be used to defend my work in front of other academics.

University of Southampton Formula Student Team **Oct. 2022 – Jan. 2023**

Driver Controls Department

- Used Solidworks CAD software to 3D design a new brake pedal for our car.
- Conducted stress analysis using ANSYS FEA software to test the pedal design.

University of Southampton Formula Student Team **Oct. 2020 – May. 2021**

Aerodynamics Department

- Worked in a 5-person rear wing subdepartment.
- Conducted 100+ hours of research and development to improve the rear wing design of the car.
- Tested each design using Siemens Star-CCM+ and our university's HPC.
- Independently designed and tested a new swan neck design to attach the rear wing to the car.

F1 in Schools (Notre Dame High School and Sixth Form) **Oct. 2019 – Jan. 2020**

Design Engineer

- I was the team member in charge of research and development for our team due to my proficiency with maths and physics.
- Iterated through 20+ aerodynamic designs created in CAD tested using CFD, improving each design using data analysis and aerodynamic research.
- During the competition, our car did perform better than the previous year's design and I received high praise from the judges for my demonstrable enthusiasm, determination, and passion for my work.

EDUCATION

University of Southampton **Oct. 2020 – Jun. 2024**

MEng – Aeronautics and Astronautics: Aerodynamics (2:1)

- Studied engineering modules in: Race Car Aerodynamics, Applications of CFD, Experimental Aerodynamics.
- Was the group leader for my Master's project where all 5 group members achieved over 70%
- Member of the motorsport society where I would go karting. I worked hard during my time there to climb to be a regular podium contender within the club.
- Member of the tea and fandom societies where I was able meet a diverse range of people from different backgrounds.

Notre Dame Sixth Form **Sep. 2018 – Jul. 2020**

A-Levels

- Mathematics: A*
- Further Mathematics: A*
- Computer Science: A*
- Physics: A*
- Extended Project Qualification (CFD Analysis of 2017 F1 car): A

WORK EXPERIENCE

City of Norwich Aviation Museum **Feb. 2025 – Jul. 2025**

Volunteer

- Repaired the undercarriage and ailerons of an Avro Vulcan.
- Converted the fuselage of a Fokker F27 Friendship into a classroom environment for school trips to the museum.

Tesco **Nov. 2024 – Jan. 2025**

Store Colleague - Nights

- Worked in a team of 50+ people to prepare the store for the next day.
- Restocked 300+ items per shift.
- Demonstrated resilience by completing long and challenging night shift work.

KLM UK Engineering **Aug. 2019**

Placement Aircraft Engineer

- Worked in 3 departments: Base Maintenance, Electrical Engineering and Structures.
- Serviced and repaired the fuselage of a 737-300F.
- Tested the electrical systems of a 777F including performing a full test of the take-off systems.