

Charlie Toone

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Professional Summary

Loughborough Aeronautical Engineering graduate with passion for motorsport, cars, and aviation, seeking suitable roles within these industries.

Having been inspired to study Aeronautical Engineering from experience of building and flying FPV Drones and planes, as well as experience of driving simulators, is well suited to a role that extends beyond theory into practical application, which introduces new elements where holistic thinking and problem solving skills are needed.

From enjoyment of polo and clay pigeon shooting societies, group projects, and practicals, is someone who likes working in an interactive team environment in addition to independent work.

Technical Skills

MATLAB / Simulink

Creation of tyre and $\frac{1}{4}$ car model | PID control and root locus plot | Data analysis and visualisation

CAD (Siemens NX 12 & Dassault Systèmes CATIA 3D Experience)

NX: Wing, piston & connecting rod, Helicopter blade assembly | CATIA: Developing F1 front wing

FEA (Siemens NX 12)

Stress testing of wing and helicopter blades

CFD (Simcenter STAR-CCM+)

Mesh analysis and RANS simulation of flow around a wing at varying angles of attack |

LES simulation of flow around a cylinder

Education

Bachelor of Engineering in Aeronautical Engineering

Loughborough University

2:1, Upper Second-Class Honours

Relevant modules:

- Thermofluids, Incompressible Aerodynamics, Compressible Flow, Intro to CFD
Thermodynamic laws | Air Standard cycles for IC engines | 2D & 3D aerofoil theory | Viscous flows and boundary layer theory
- Turbomachinery and Propulsion
Radial flow compressors and turbines
- Dynamics & Vibration, Engineering Mechanics
Statics & Kinematics | Equations of motion | Free and forced vibration of 1 and 2 DoF systems
- Mechanics of Materials, Engineering Materials, Structural Design Project, Elasticity
Shear force & bending moments | Stress & strain | Material indexes

Thesis:

Topic: Vehicle dynamics

Title: Terramechanics Tyre Modelling

Overview: Developed a numerical model of tyre-terrain interaction in MATLAB based on Bekker's pressure-sinkage relationship to evaluate vertical load and sinkage behaviour across various terrains. Integrated the model into Simulink feedback loops for dynamic load simulation.

A Levels

OCR: Maths (A), Physics (B), Further Maths (B) | AQA: Chemistry (B)

Selby College

GCSE's

9 GCSEs including Maths (8), English (6), and Double Science (9-8)

Selby High School

Projects

Fly-by-wire balsa plane – Pilot

Tools: AutoCad, laser cutter

Outcome: Successful demonstration of the plane's ability to fly and its flight characteristics around a sports hall in front of class. Placed as one of the top groups in the number of laps completed in a set time. Gained experience of making a file suitable for laser cutting, as well as calibrating and using the laser cutter.

Wind Tunnel Test of wing

Tools: SU2, Wind Tunnel

Outcome: Took responsibility for adjusting the weight sensor when changing wing angles. Compared wind tunnel results to CFD (SU2) results for a wing at varying angles of attack.

Stress Testing Wing (FEA vs. balsa wing)

Tools: NX 12, Clamp and Load machine

Outcome: Compared hand calculations to FEA simulations and experimental results of stiffness, strength and deflection for a custom designed and manufactured balsa wing.

PC Build for racing simulator

Tools: Windows 11, MSI bios

Outcome: Improvement of simulation hardware for racing simulator. Conducted research into what set of compatible parts would be best for this use case within budget. Assembled all of these parts following the correct protocol. Set up Windows and all the necessary software, involving using the BIOS to troubleshoot issues.

3D printed GoPro mount

Tools: Fusion 360, UltiMaker Cura, 3D printer

Outcome: Overcame the problem that the default GoPro mount is too heavy and bulky for an FPV drone (and also provides no method for attaching an ND filter) by collaborating on the creation of a custom made mount using Fusion 360, UltiMaker Cura, and a 3D printer. Refined the design over multiple iterations to improve rigidity and ease of use.

Tuning Propwash out of an FPV drone

Tools: Betaflight, PID control

Outcome: Reduced oscillations that would occur during specific manoeuvres via PID control tuning.

F1 front wing (CAD)

Tools: CATIA 3D Experience

Outcome: Gained familiarity with CATIA 3D Experience by starting the creation of a 2026 regulation F1 front wing. Took dimensions and coordinates from the FIA regulations to create the reference volume boxes, which outlined the maximum space the wing could occupy. Generated aerofoil geometry at centreline and endplate sections, as well as guidelines on the leading edge and trailing edges, in order to create a surface. Continuing development of the full multi-element wing for CFD analysis.

Certifications / Awards

Flight Laboratory Course, Cranfield University, 2024

(National Flying Laboratory Centre, Saab 340B flight test programme)

Boarded the Saab 340B and took on the role of a flight test observer for two flights (interpreting dials on a digital instrument panel) as the pilot performed several manoeuvres demonstrating flight characteristics of the plane. The data collected was then analysed in order to estimate aerodynamic properties of stability, controllability or performance, and these were compared to theoretical values.

Jim Kwik Learning Programmes, Kwik Brain (online), 2024

Completed courses in memory, productivity, reading, thinking, and confidence. Developed frameworks for accelerated learning, mental performance, and motivation, supported by neuroscience-based methods.

Polo Tournaments, Rugby polo club, 2025

Competed in Winter and Summer SUPA Polo tournaments, achieving 2nd place in combined teams representing Loughborough during the winter tournament.

Extracurricular Activities

FPV Drone and Plane Builder & Pilot, Independent, 2017 – present

Build and pilot RC FPV drones and foam board aircraft. Gained hands-on experience with carbon fibre frames, flight controllers, speed controllers, LiPo batteries, brushless motors, and live video/radio equipment. Performed precise cutting of foam board to manipulate into specific shapes including aerofoils, using a hot glue gun. Completed intricate soldering and wiring in confined spaces. Gained experience flying these at speeds up to and sometimes exceeding 100mph.

Polo Player at Loughborough University Polo Club, 2024 – 2025

Learned to ride and play polo by attending group polo lessons. Developed teamwork and decision making skills in a fast paced, high pressure, high adrenaline environment.

Clay Pigeon Committee Member at Loughborough University Clay Shooting, 2023 – 2025

Joined in 2nd year and became part of the committee in 3rd year. Helped create a welcoming environment and take on board everyone's preferences, as well as working with the chair and other committee members to organise and host social events.

Racing Simulator Driver, Independent, 2022 – present

Experience using racing and Assetto Corsa with force feedback wheel and pedals. Gained a deeper understanding of tyre temperature and grip, downshifting at the correct RPM, braking techniques, weight transfer and other driving techniques.

Karting Member at Loughborough University Kart, 2024 – 2025

Through experience completing racing sessions in a kart around a track, gained practical understanding of driver psychology, focus, and fatigue, alongside technical insights into taking different lines, grip, g-forces, and braking.

Attendance of motorsport events, Independent, 2021– present

Enthusiast for experiencing racing in person, having camped at Silverstone for the F1 Grand Prix weekend in 2021 and 2022, visited Croft and Donington Park to support a formula 1000 competitor, and most recently attended Donington Park to watch the superbikes. Also frequently attends The Motorist for cars and coffee events.