# Advanced Motorsport Engineering MSc
# Advanced Motorsport Mechatronics MSc

## Student CVs

## Academic Year 2024/2025

Collected 9/5/2025.
Distributed in relation to the Group Project presentation day for employment purposes only.
Please do not retain after 31/12/2025

AlbuquerqueVale_José
Aldred_Lea
Asghar_Saad
Aynés_Jordi
Berlanga_Edurne
Bhatti_Umar
Bosschaert_Sebastien
Cheetham_Emma
Courtney_Robert
Cowles_Graham
Drolia_Divya
Egberongbe_Tolu
Garcia Gaspar
Garcia_Alvaro
Gomes_Recchia_Gabriel
Gray_Alexandra
Hanna_Dominic
Healy_Cian
Imboden_Steve
Knill_Thomas
Kuhlmann_Blake
Lacombe_Tristan
Lahoz_Marc
Man_Fiona
Mark_Neil
Modi_Shwetaank
Nayak_Prasannaganapati
Nolasco_Juan
Paeshuys_Oliver
Piper_Sebastian
Robinson_Peter
RouresVives_Sergi
SáncheziForns_Arnau
Schoeman_Wilhelm
Singh_Arnav
Smith_Andrew
Sonveau_Thomas
Sridharan_Adhityan
Stanculescu_Robert
Sudheer_Pranav
Tolnai_Laszlo
Topa_André
Vyas_Pranshu
Watt_Ben
YASIR
Zugazagoitia Alexandre

# José Albuquerque Vale

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**in** josealbuquerquevale

## Personal Statement

Highly motivated and passionate candidate with a keen interest in the vehicle dynamics and strategy fields of the motorsport sector. Obtained key skills and knowledge, directly applicable to the industry, after one year of racing experience in touring cars. Analytical, organised, and hard-working, as proved by academic achievements such as the honours awarded with final undergraduate project. Strongly cooperative with exceptional communication skills, acquired in sporting and professional environments. Bilingual in English and Portuguese, offering original solutions to engineering problems with BSc in Physics.

## Key Achievements

- Progressed 16 y/o driver from last to P8 out of 15 in the standings within a season (Scandinavian Touring Car Championship, 2024).
- Responsible for the Vehicle Dynamics department in the best-ranked Swedish Formula Student team, helping it obtain its highest-ever point tally at a competition (Lund Formula Student, 2023/24).
- Achieved multiple class wins alongside gentleman driver (Historic Touring Car Challenge, 2024).
- Awarded honours on the BSc in Physics final thesis (Lund University, 2023).
- Won the Portuguese under-23 national championship 3 times (Portuguese Rugby Federation, 2013-2016), and Portuguese under-16 doubles vice-champion (Portuguese Tennis Federation, 2009).

## Education

**Cranfield University** *Oct 2024 - Sep 2025*

*MSc in Advanced Motorsport Engineering*

- **Modules:** Motorsport Vehicle Dynamics, Motorsport Aerodynamics, Motorsport Powertrains, Computational Fluid Dynamics for Motorsport, Composite Structures for Motorsport, Motorsport Structural Analysis, Motorsport Electronics and Data Acquisition, The Business of Motorsport.

**Lund University** *Aug 2018 - June 2023*

*BSc in Physics*

- **Modules:** Finite Element Method, Automotive Technology, Batteries for Electromobility, Introduction to AI, General Physics, Thermodynamics, Atomic and Molecular Physics, Nuclear Physics, Solid State Physics, Particle Physics, Cosmology and Accelerators.
- **Thesis** Developed an investigation for a particle physics project using Monte Carlo simulations at the European Spallation Source (ESS), the world's most powerful neutron source, which was awarded with honours (VG).

## Experience

**Data Engineer @ British Formula 4** *United Kingdom*

*JHR Developments* *Feb 2025 – Present*

- Charged with extracting and analysing data from 4 cars and detecting performance improvement areas for the driver and the car setup.
- Developed algorithms on WinTAX and Excel to detect said areas faster, enabling more data to be studied at a higher rate.
- Tracked the car's health signs with the programs above to predict and prevent breakdowns.

**Race Engineer** *Germany & Sweden*

*NXT Gen Cup* *Apr 2025 – Present*

- Conducted track walks, debriefs, and video sessions for 4 drivers to detect areas of improvement.
- Responsible for distinguishing between driver and setup limitations to suggest changes in the car to enhance performance using Data Master.

- Charged with communicating these changes with the respective mechanics and ensuring that each car is ready for the next session.

**Race & Data Engineer @ Swedish Touring Car Championship** *Sweden*
*Exion Racing* *May 2024 - Sep 2024*

- Responsible for two cars for every practice and race, communicating with them throughout the session via radio, and conducting the driver debrief with video analysis to obtain setup information.
- Extracted and analysed data from each car using MoTeC I2, to decide with the performance engineer the setup changes for the team's 3 cars for the next session.
- Achieved the largest improvement in the competition by coaching a driver from last after the first two races to P8 out of 15 at the end of the season, coupled with multiple team podiums.

**Vehicle Dynamics Engineer** *Sweden*
*Lund Formula Student* *Aug 2023 - Aug 2024*

- Developed hand calculations, suspension kinematic analyses in Lotus Shark and Adam's Car, and performed 100+ lap-time simulations on ChassisSim to set physical targets for other sub-teams to aim at, along with validating design changes.
- Influenced deeply the design of the suspension system, determining the optimum values for the pick-up points, springs, dampers, and anti-roll bars, which led to exceeding the steering effort target by 11%.
- Placed top 10 at FSN with one event podium, and scored a team record point tally at FSCZ.

**Assistant Mechanic @ Historic Touring Car Championship** *United Kingdom*
*Rover 3500 SD1 - Gentleman Driver* *May 2024 - Present*

- Bridged the gap between the driver and mechanics during races by translating between Portuguese and English to clarify the communication.
- Scrubbed tyres for better performance and tracked lap times and pit stop time to optimise strategy.
- Class winner at the Donnington Historic Festival and the Oulton Park Gold Cup 2024, 4th at the Silverstone Festival 2024.

## Skills

**Data & Suspension Analysis:** MoTeC I2, McLaren ATLAS, Pi Toolbox, WinTAX, Data Master, Lotus Shark, Adam's Car.

**Motorsport:** AVL Boost, ChassisSim, HyperMesh, ANSYS Fluent.

**Design:** CATIA, SolidWorks.

**Programming:** Python, MATLAB, Simulink, LaTeX, Windows, MacOS, Linux, Microsoft Office Suite (Excel, Word, etc.).

**Certifications:** MATLAB Onramp & Simulink Onramp by MathWorks, Vehicle Dynamics Fundamentals by Wavey Dynamics.

**Languages:** English (fluent), Portuguese (fluent), Spanish (proficient), Swedish (proficient).

## Interests

**Tennis:** Portuguese national under-16 doubles vice-champion (Portuguese Tennis Federation, 2009). Played international tournaments aged 12 to 19, the last year applied solely to the sport, practising 7 hours/day.

**Rugby:** Under-23 national champion three times, with three under-23 Portuguese cups and three Supercups (Portuguese Rugby Federation, 2013-2017).

**Cooking:** Worked as a kitchen chef for one and a half years, selling 700+ meals a day. Managed a student republic's restaurant, serving 100+ dinners under a strict budget.

**Event Management:** Organised festivals with 1300+ guests, being charged with logistics, security, and human resources. Led a team of 20 to run the bar and kitchen of a student club with 350+ guests every other week for two years.

# LEA ALDRED

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## PERSONAL STATEMENT

A highly motivated individual, currently completing an MSc in Advanced Motorsport Engineering at Cranfield University. Seeking to challenge the limits of engineering while completing any tasks given to a high standard. A dependable team member able to handle multiple tasks with a calm and measured approach while communicating findings to the team. A hard-working colleague with good time management skills, integrity and is approachable with a friendly nature.

## KEY ACHIEVEMENTS

- Successfully used Ansys Structural Optimisation to topologically optimise the rear spaceframe chassis for a LMH Hydrogen Combustion Vehicle (Cranfield University, 2025)
- Achieved a first-class degree in BEng Automotive and Motorsport Engineering (University of Huddersfield, 2024)
- Successfully designed an Impact Attenuator to meet the given regulations (Team Hare, 2024)
- Gained a Level 5 CMI Award in Management and Leadership (Chartered Management Institution, 2023)

## EDUCATION

**MSc Advanced Motorsport Engineering, Cranfield University, Cranfield** **October 2024 - September 2025**

- **Modules:** Structural Analysis, Electronics and Data Acquisition, Vehicle Dynamics, Aerodynamics, Computations Fluid Dynamics, Business of Motorsport, Composite Structures, Powertrains

- **Group Design Project:** Worked within a team to design a Hydrogen Le Mans Hypercar. Focussing within the structures department to design and validate the rear chassis

**BEng (Hons) Automotive and Motorsport Engineering, University of Huddersfield, Huddersfield. First Class Degree** **September 2020 - July 2024**

- **Modules:** Aerodynamics and Computational Fluids, Design Analysis, Vehicle Handling and Performance Prediction, Project Quality and Production Management, Final Year Project

- **Team Hare (Formula Student):** Worked within a team to design and build the first electric powered car. Made a lasting impact on the team, by ensuring that in the future they could use the self-designed Impact Attenuator resulting in no more penalty points being awarded to the team

## FORMULA STUDENT

**University of Huddersfield, Designing and Manufacturing of an Impact Attenuator** **July 2023 - July 2024**

- Conducted in-depth research by reviewing academic literature on the testing and design of Impact Attenuators, focusing on aluminium honeycomb, foam and composite structures. Applying the knowledge to concept designs on Solidworks

- Learnt the methodology about ANSYS LS-DYNA and validated complex collision FEA, therefore simulating real-world testing and successfully tested Impact Attenuator

- Organised the manufacture of the Impact Attenuator by coordinating with the fabrication team to monitor the machining processes, welding and assembly to guarantee the part was manufactured to the regulations and met the final CAD design in the 1-week timeframe

- Demonstrated a strong ability to communicate crucial technical information by writing a report while maintaining a high standard of professionalism and accuracy, this resulted in the 2 researchers understanding and asking further questions about my work

- Engaged in cooperative efforts within a team of 10 to design and build a competitive electric vehicle, worked with different departments ensuring that 100% of deadlines were met, resulting in the completion of the car being manufactured before the competition

## PROFESSIONAL EXPERIENCE

**Syngenta, Huddersfield, Huddersfield, Year in Industry** **September 2022 - August 2023**

Global Top Tier COMAH Chemical Production Site

- Communicated in a group to ensure site safety by efficiently fixing any site breakdowns to successfully eliminate 80% of the risks to site
- Cooperated with 3 different on-site contractors to express company requirements regarding the retrospective civil projects on site, ensuring drawings were kept up to date and projects concluded in the given timeframe with client satisfaction increasing from 60% to 75%
- Solely responsible for examining and optimising the sites steam system, organised for a 5-day survey to be conducted across the 294 Steam Traps on site, resulting in new maintenance procedures to guarantee continuous improvement on the steam network
- Simplified the ways or working by cooperating with 3 colleagues, by using SAP to assist with data management and to generate new routines and for the technicians saving the team 4 hours of work for every procedure carried out on the steam network
- Presented my finding to 10 members of Senior Leadership Team and demonstrated effective communication to maximise the uptime for plant staff to increase their satisfaction, resulting in a new approach being taken when carrying out maintenance and reducing labour time by 50%

## WORK EXPERIENCE

**The Curtain Shop, Ossett, Health & Safety and Anti-Ligature Consultant** **August 2019 - September 2024**

Local Curtain Manufacture and NHS Sub-Contractor

- Undertook a specialist project for 6 hospitals in the Leeds and York Mid Yorkshire NHS Trust, worked with 3 colleagues to collect and record data from load testing anti ligature products to reduce the risk of related incidents by 100%
- Individually created a concise report informing the trust about the data acquired, highlighting the units that did not meet the legal requirement of a 40kg drop. Leading to the NHS making informed decisions about safety on the wards

## SKILLS

**Software:**

- Experienced in McLaren ATLAS, PI Toolbox, Solidworks, Ansys Static Structural, LS-DYNA, Microsoft Office

**Teamwork:**

- Consulted between different departments managers, within the Head of Impact Role for Team Hare to ensure an efficient design process.

**Self-Motivated:**

- BEng Academic Project required self-management of work to meet University deadlines and to ensure weekly supervisor meetings were successful

**Problem-Solving:**

- Designed and validated the team's first compliant Impact Attenuator for Formula Student by interpreting FSUK regulations, performing CAD modelling and simulations.

## INTERESTS & EXTRA CURRUCULAR ACTIVITES

- Dedicated to the gym, while constantly thriving for personal improvement by constantly pushing to limits and failure multiple times a week. This requires consistency and discipline, relating to the training and diet both inside and outside of the gym
- Enjoys exploring rural places in and around the local area, while leading and directing a group of 4 with a map. With the end goal being to lead the group to complete the Yorkshire 3 Peaks

# Saad Asghar

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Cranfield University

## PERSONAL STATEMENT

An enthusiastic Engineer with professional hands-on experience in Motorsport Engineering. Exhibits strong interpersonal, communication, organisational and leadership skills, enhanced by working in the motoring industry for ten years. Experienced as a project manager, focusing on operational optimisation and able to lead a team of highly skilled personnel, who is also an astute problem solver and career-focused individual. Perseverance to deliver with the highest standard of attention to detail. Currently enrolled for a Postgraduate degree in Advanced Motorsport Mechatronics at Cranfield University.

## KEY ACHIEVEMENTS

- Achieved a First-Class classification for the final year individual project during the Undergraduate programme, assembling a donor race car and increasing overall power output for Formula Asia by 10 kw during EMC calibration.
- Implemented Power Management Unit (PMU) used by the Kingston University Motorsport Team to replace the conventional fuse box, resulting in weight reduction.
- Attained a First-Class degree in BSc Motorsport Engineering.
- Led a team for the IMechE Design Challenge for Undergraduate Engineers 2016, winning the best presentation award at the University College London.
- Have hiked to the K2 base camp in the Karakoram Mountain range

## EDUCATION

**MSc Advanced Motorsport Mechatronics: Cranfield University, United Kingdom (October 2023 - Present)**

- **Modules**: Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Vehicle Control Applications, The Business of Motorsport, Motorsport Powertrains, Mechatronics Modelling for Vehicle Systems, Advanced Control and Optimisation, Embedded Vehicle Control System and Vehicle Control Applications.
- **Group Design Project**: To be confirmed.
- **Individual Thesis Project**: To be confirmed.

**BSc (Hons) Motorsport Engineering: Kingston University, United Kingdom (September 2015 - June 2018)**

- **Modules:** Engineering Applications and Practice, Engineering Design, Materials and Manufacturing, Engineering and Mechanical Principles, Technology Mathematics, Electronics and Computing, Project Engineering and Management, Analytical Techniques, Electronics and Control, Engine and Vehicle Technology, Business Management and Quality Systems and Racecar Design and Analysis.
- **Industrial Group Project**: Upgrading series connections to the multiplex system to install CAN-Bus, installing the Programmable Electronic Control Module and Power Management Unit, and replacing the conventional fuse box for the Kingston University Motorsport team (Caterham).
- **Individual Project**: Calibration of Electronic Control Module for single-seater formula Asia Race Car to increase power and torque on a standard 2.0-litre Ford engine, achieving a gain of 10 KW with a linear power curve with a gradual power drop at Wide Open Throttle.

## CAREER HISTORY

**Liontos Engineering: Remote (October 2024- Present)**

- Product development and mechatronic modelling based on customer requirements.

**Halfords Autocentre: Redditch, UK - MOT Tester and Technician (October 2018 - April 2021)**
Automotive Servicing and Repairs

- Designated MOT tester, responsible for ensuring that the vehicles presented for an annual test were tested and examined to the standards set by the Ministry of Transport.
- Performed diesel particulate filter regeneration with 0 per cent comebacks.
- Addressed customer concerns and provided technical assistance to branch managers, resulting in 10% client retention.

**Kingston University (KU) Motorsport: London, UK - Race Team Member (September 2017 - June 2018)**
University race team

- Spearheaded group project of the manufactured bespoke wiring loom, resulting in simplicity and improved lap timing by a quarter of a second due to weight reduction.
- Collaborated on delivering a novel Race Car Management System, resulting in a weight reduction of 4kg.

**Officer Training Corps (Sandhurst Group), University of London: United Kingdom - Officer (October 2015 - June 2018)**
Army Officer Training Corps for students

- Learned how to lead a team of highly skilled individuals in extreme situations and take full responsibility for the team, enabling leadership skills.
- Planned operations, communicated the plans with the rest of the subordinates and empowered others under command, enabling 100 percent success no matter the mission requirement.
- Commanded a group of individuals on various patrolling missions while on exercises, highlighting management skills.

**College Race Team, Barking & Dagenham College, Road Campus: London, UK - Technician (October 2014 - June 2015)**
College race team

- Managed vehicle set-up for the day, resulting in 1 tenth of a second faster than the previous lap timing.
- Analysed data and test results of the test session during track days, enabling a better understanding of the vehicle behaviour around the track, achieving over 80 per cent on coursework assignments.

## SKILLS, INTERESTS, AND EXTRACURRICULAR ACTIVITIES

- **IT skills**: good knowledge of MATLAB/Simulink, SolidWorks, Computational Fluid Dynamics & Stress Analysis, and basic knowledge of the Python programming language. Proficient in using ECU Master (EMU) and Easimap software packages, Microsoft Office, including MS Project and advanced use of Mindjet, including Mind Manager.
- **Technical training:** Professional Motorsport Data Analysis, Practical wiring harness build – Professional Motorsport
- **Individual interests**: Motorsport, vehicle modification, gym, travelling, hiking and mountaineering.
- **Memberships:** Member of The Institution of Engineering and Technology (MIET) and Affiliate Member of the Institute of Motor Industry (AFMIM).

# JORDI AYNÉS RULLÓ

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## PERSONAL STATEMENT

Mechanical Engineer with hands-on experience in CAD design, FEM simulations, and composite materials manufacturing for the motorsport industry. Demonstrated success in leading projects from design to manufacturing, reducing weight and improving performance for high-demand applications. Extensively involved in Formula Student, with expertise in carbon fibre parts design and optimization techniques for vehicle performance and obsessed in competitive advantage. Driven to tackle complex engineering problems and deliver innovative solutions within tight deadlines. Motivated by a love for new projects, continuous learning, and the pursuit of creative opportunities.

## EDUCATION

**Double MSc in Advanced Motorsport Engineering, Cranfield University, Cranfield, UK** **October 2024 - September 2025**

- Modules: Induction and Introduction to Motorsport, Motorsport Structural Analysis, Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Motorsport Aerodynamics, Computational Fluid Dynamics for Motorsport, The Business of Motorsport, Composite Structures for Motorsport, Motorsport Powertrains.

**Double MSc in Mechanical Engineering, Universitat Politècnica de Catalunya, Barcelona, Spain** **September 2023 - September 2025**

- Modules: Electronics Development, Process Control, Machine Calculation, Industrial Organization, Electric Technology, Machine Technology, Structures Theory, Business and Management, Construction and Industrial Architecture, Hydraulic Machines, Thermal Machines, Transports, Machinery project, Human Resources, Energy Technology and Chemistry Technology.

**BSc in Mechanical Engineering, Universitat Politècnica de Catalunya, Barcelona, Spain** **September 2018 - June 2023**

- Final thesis with a 10/10 mark: - Manufacturing and validation of a CFRP rim.
- Modules: Thermodynamics, Fluid Mechanics, Materials, 3DCAD design, Structures, Materials Resistance, Mechanics, Automatic Control, Statistics, Finite Elements study, Machines and Mechanisms theory, Manufacturing Systems, Business and Management, Electromagnetism, Simulation and Optimization, Electric machines, Linear algebra, Calculus, Differential Equations, Chemistry.
- Degree combined with the Formula Student university's team.

**Technological Baccalaureate, La Salle Bonanova, Barcelona, Spain** **September 2016 - June 2018**

- Final thesis: Study on motocross suspension forks. With a prototype of pneumatic internal cartridge manufactured.

## CAREER HISTORY

**DARNE SPORTS Composites, Sabadell, Spain, Composites Engineer** **February 2024 - August 2024**

Specialized in composite design and manufacturing for the motorsports industry, producing components for high-profile projects like Singer, Cupra Racing, Alinghi Red Bull Racing, Audi...

- Executed CAD design and FEM simulations of carbon fibre and other composite parts, mainly focused on the motorsport industry
- Coordinated production control and organization, quality control responsible for more than 5 different projects

**BCN eMotorsport, Barcelona, Spain, Chassis & Composites Engineer** **Sept 2021 - Sept 2023**

Competed with electric manual and autonomous prototypes as part of a Barcelona-based Formula Student team, recognized as the best team in Spain.

- Designed a complete monocoque from scratch with a **15%** weight reduction and improved torsional stiffness from predecessor
- Manufactured two monocoques and the moulds, with the entire structural assembly and several parts of the car: CFRP Impact Attenuator, entire ergonomics package, accumulator container, CFRP anti-roll bars, etc
- Managed the Structural Equivalency Spreadsheet for the competitions. Validating every component through experimental physical tests in the laboratory and successfully competing in FS: Czech 22', Spain 22' & 23', Germany 22' & 23', Italy 23'
- Designed and manufactured inhouse carbon fibre rim and the moulds, with a **43%** weight reduction compared to the lightest comercial CFRP rims
- Designed a PAHT/Monolithic/Aluminium topological optimized full insert package with more than 80 optimized single pieces

**Results:** P1 Autocross EV, P1 Skidpad DV, P1 Cost & Manufacturing, P2 Trackdrive DV, P3 Skidpad EV, P3 Skidpad DV, P2 Overall DV FS Spain, Engineering Design Finals

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

**Softwares:** Solidworks, Altair Hyperworks & Hypermesh, RADIOSS & Optistruct, Python, AVL Boost, ANSYS Mechanical APDL, 3D printer slicer softwares

**Languages:** Catalan: Native, Spanish: Native, English: C1

**Design & simulation:** Parametric optimization, Topological optimization, Isotropic and anisotropic materials simulation, Design and manufacturability of carbon fibre parts

### Workshop skills

- Manufacturing of composites pieces (wet fibre and prepreg lamination, resin infusion...)
- Angle grinder, dremel, drill, sandblasting, etc
- Welding
- Anodizing

### Certificates

- Solidworks CSWA: Achieved with maximum grade
- Invensity: Project management and Agile PM with SCRUM, Leadership, Time Management
- IELTS Academic: 7,5/9 (C1)
- Driving licenses: Car (B) and motorcycle (A2)

### Interests

- Motorsports fan: F1, WRC, MotoGP, MXGP, etc
- Car & motorcycles enthusiast
- Passionate for vehicles builds and restorations: Currently doing a full motorcycle, a Formula Ford & a pit bike restoration
- Passionate for new projects with ambition for challenges, looking to always be busy

### Soft skills

- Strong team player with an extroverted, open attitude, fostering effective collaboration across departments and companies
- Experienced in teamwork, prioritizing a positive attitude and nurturing strong relationships to enhance the work environment.
- Proactive problem-solver, taking initiative to address challenges and drive solutions
- Passionate about continuous learning and self-development, quickly adapting to new and diverse

# EDURNE BERLANGA JORBA

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## PERSONAL STATEMENT

A highly passionate and proactive motorsport engineer with a strong background in automotive engineering, currently pursuing an MSc in Advanced Motorsport Engineering. Thriving on challenges and innovation, with extensive academic and project experience in Formula Student and endurance racing. Particularly inspired by F1 and driven to exploring cutting-edge technologies, continuously learning and contributing meaningfully to high-performance motorsport environments. Eager to apply advanced engineering techniques and creative problem-solving to deliver impactful results in the motorsport industry. Fluent in both English and Spanish with extensive international experience, resulting in an open and adaptive personality that fosters resilience and success in diverse environments.

## KEY ACHIEVEMENTS

- Awarded the Academic Excellence Scholarship at Francisco de Vitoria University, demonstrating strong academic performance (2020)
- Led the design and development of an exhaust system as part of the Formula Student UFV Racing Team (2020-2021)
- Led the CAD and transmission design for the Shell Eco-Marathon electric vehicle project, advancing the team's electric powertrain systems (2022-2023)
- Strategised for the " Ultima Vuelta" Endurance UV race, optimising performance for the Motor and Sport Institute team (2023)
- Completed High Voltage Expert certification and obtained certification by Mercedes-Benz Spain S.A.

## EDUCATION

**MSc in Advanced Motorsport Engineering, Cranfield University, UK**

- **Modules:** Motorsport Powertrains, Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Composite Structures for Motorsport, The Business of Motorsport, Motorsport Aerodynamics, Computational Fluid Dynamics for Motorsport, Motorsport Structural Analysis and Group Design.

- **Projects:** Optimisation of multiple engines, including a model of the 2026 F1 engine. CFD analysis of a quarter car F1 model. Design and structural testing for an F1 brake pedal, modelling of a gasoline engine and adaptation to hydrogen combustion for an LMH car.

**BSc in Industrial Systems Engineering specialised in Automotive Engineering, Universidad Francisco de Vitoria,**

- **Modules:** Control, Electromagnetic Physics, Mechanical Physics, Mathematics I, Mathematics II, Control, Powertrain for Combustion, Hybrid and Electric Vehicles, Vehicle Dynamics, Suspension and Brake Systems, Electronic Systems in Vehicles, Business Organization and Production Management, Materials, Thermodynamics, Introduction to Programming, Electrical Engineering, Electronics, Fundamentals of Computing Engineering and Engineering Chemistry.

- **Individual Thesis:** ‘Establishment of a Diagnostic Strategy for an Electric Vehicle’, project carried out in collaboration with the Mercedes-Benz Training Academy in Spain to improve the diagnostic process for the brand’s electric vehicles.

## CAREER HISTORY

**Mercedes-Benz Spain S.A. Training Academy, Madrid, Internship** **February 2024 – July 2024**

- Acquired extensive knowledge of Mercedes-Benz electric vehicle systems during formation and hands-on training.
- Obtained experience with software and hardware tools used by the company when diagnosing an electric vehicle.
- Demonstrated willingness to learn and ability to acquire new knowledge by successfully obtaining the High Voltage Expert Certification recognised internationally.
- Reviewed the actual safety protocols and simplified them during bachelor's thesis project to achieve a safer and more guided diagnostic process.

**General Motors Mexico, Mexico City, Trainee** **November 2019 - November 2019**

Leading automotive manufacturer producing cars, trucks, and SUVs focused on quality and engineering excellence. GM Mexico is also advancing electric vehicle technology, contributing significantly to the automotive and motorsport sectors.

- Gained cross-functional knowledge across Manufacturing, Marketing, Sales, and R&D departments.
- Carried the analysis of manufacturing processes, marketing strategies, and after-sales services, while exploring autonomous response systems in the R&D Department.

## BSC ACADEMIC PROJECTS

**" Ultima Vuelta" Endurance UFV Racing Team | Strategy Engineer, Madrid.** **November 2023 - November 2023**

- Collaborated with the Motor and Sport Institute team to develop race strategies, ensuring optimal performance during the endurance event.
- Evaluated multiple strategy paths and managed the mechanics team to achieve the best result with the optimal strategy plan.
- Achieved a podium 3rd place finish after the 8-hr race by evaluating and making real-time decisions during the race, optimising tyres and fuel.

**Formula Student UFV Racing Team, Powertrain Department, Madrid.** **September 2020 - May 2021**

- Designed and developed the exhaust system for the team's vehicle, applying advanced engineering concepts to enhance vehicle performance.

**Shell Eco-Marathon | Electric Powertrain Department, Madrid.** **December 2022 - June 2023**

- Led CAD and transmission design for the electric vehicle, increasing energy efficiency and performance for long-distance competition.
- Identified optimisation points within the car and adapted the powertrain to convert from combustion to electric in minimal time and with little manpower.

## SKILLS AND INTERESTS/ACTIVITIES

- **Skills:** SolidWorks, Testing Program Office Certification, Adams View and Adams Car, AVL Boost, High Voltage Expert Certification by Mercedes-Benz Spain S.A.
- **Languages:** Spanish (Native), English (Fluent- C2 Cambridge Advanced Certification)
- **Interests:** Dancer for 14 years, volleyball player reaching state-wide semi-finals. Enjoy reading and having time to reflect. Passionate about volunteering, 10 years of volunteer work in different organisations including underprivileged children, soup kitchens and nursing homes.

# UMAR ZAHID BHATTI

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## PERSONAL STATEMENT

An innovative and driven mechanical engineer with a strong foundation in motorsport demonstrated through hands-on experience in Formula Student and Baja SAE. Possesses analytical and problem-solving skills through extensive involvement in designing, testing and optimising high-performance vehicles. Eager to utilise key skills in vehicle dynamics, tyre behaviour and performance simulation developed at Cranfield University to contribute to a leading motorsport team, to play an important role in driving vehicle performance and success on the racetrack.

## KEY ACHIEVEMENTS

- Awarded Rector's Gold Medal for first-ever participation in Formula Student Electric by a team from NUST Islamabad Campus at the annual high-achievers ceremony 2023.
- Played a pivotal role in two different student automotive teams, helping to design and manufacture their very first vehicles in 2022 and 2023.

## EDUCATION

**MSc Advanced Motorsport Engineering, Cranfield University, Cranfield, UK** **Oct 2024 – Sept 2025**

- **Modules:** Vehicle Dynamics (92%), Electronics and Data Acquisition (72%), Composite Structures (79%), Powertrains, Aerodynamics, Structural Analysis, Computational Fluid Dynamics, Business of Motorsport.
- **Group Design Project:** Currently working on MATLAB and ChassisSim based laptime simulation and suspension design for a Hydrogen-Powered Le Mans Hypercar.

**BSc Mechanical Engineering, NUST, Islamabad, Pakistan** **Sept 2019 - Jun 2023**

- **Modules:** Vehicle Design Performance, Internal Combustion Engines, Mechanics of Materials, Fluid Mechanics, Thermodynamics, Machine Design, Probability and Statistics.
- **Final Project:** Design and Fabrication of Suspension, Brakes and Steering System of a Formula Student Car.

## STUDENT ENGINEERING TEAMS

**Team Alif, Islamabad, Pakistan, Technical Director and Suspension Lead** **Jul 2022 – Jun 2023**
Formula Student (Electric) team based in NUST Islamabad Campus

- Designed suspension geometry, upright assembly and improved brake disc thermal performance of the 2023 car, accomplishing 32% weight reduction with topology optimisation.
- Headed design and integration of multiple vehicle subsystems for the team's first vehicle.
- Trained 5+ members on vehicle dynamics, suspension geometry, SolidWorks, and FEA.
- Managed manufacturing including manufacturing processes, timeline, task delegation and inter-team coordination enabling the team to deliver the finalised vehicle 2 months after design freeze.

**Team Markhor, Islamabad, Pakistan, Director Suspension, Brakes and Steering** **Dec 2020 – Dec 2022**
Baja SAE team based in NUST Islamabad Campus

- Led a team of 10+ members working on the design and manufacture of suspension geometry, ride analysis, brakes, and steering of the team's first SAE Baja vehicle.
- Formulated an extensive database of material and spare part suppliers as well as manufacturing facilities in the local market, comprising 25+ businesses.
- Developed Proposal for Business Proposal of Baja SAE Arizona 2022, working in a team of 6 members to achieve 4th position.
- Recruited and trained 5+ members in vehicle dynamics, Lotus Shark, SolidWorks, and Ansys.

**IMechE Student chapter at NUST, Islamabad, Pakistan, Director Technical** **Sept 2020 – Dec 2022**
Group of student affiliate members of IMechE studying at NUST Islamabad

- Cooperated with 5 other team members to interview and select the team for the academic year 2020-2021 and 2021-2022.
- Designed and implemented an Arduino-based electronic timing system for external pipe climber robots as part of the national round of the IMechE Abul Kalam Design Challenge at NUST.

## CAREER HISTORY

**Byonyks Pvt Ltd, Lahore, Pakistan, Quality Assurance Engineer** **Oct 2023 - Jul 2024**
Byonyks is a Medical Devices Company based in the USA and Pakistan that has developed a low-cost automated peritoneal dialysis machine for use in hospital and residential settings.

- Reviewed and interpreted regulatory standards to ensure testing protocols and equipment met FDA IEC 60601 compliance requirements.
- Authored comprehensive technical reports to document testing and validation results, ensuring findings were effectively communicated to members of senior management in weekly meetings.
- Developed and executed comprehensive test cases for Internal Verification and Validation Study in preparation for the FDA's 510k approval application.
- Executed mechanical and operational examinations of two different variants of peritoneal dialysis machines and 5+ disposable tubing sets to verify reliability of the prototypes produced and communicated findings to respective engineering departments.
- Analysed various QC test rigs for the factory assembly line, working cross-functionally with engineering teams to identify defects and areas for improvement.

**Nestlé Waters, Islamabad, Pakistan, Operations Intern** **Jul 2022 - Aug 2022**
Nestlé Waters is the water division of the Nestlé Group and the leading bottled water company worldwide.

- Carried out water-mapping of the facility for 2020 and 2021, accounting for 99.89% of water usage.
- Performed an analysis of the water level variability of the underground water table and nearby Rawal Dam over the last 5 years to ensure the facility continues receiving an uninterrupted water supply.

**PowerWalk, NUST, Islamabad, Pakistan, Mechanical Design Intern** **Jul 2021 - Aug 2021**
A Pakistani Startup based in National Science and Technology Park in NUST University developing power-generating walkways.

- Designed a generator for an energy-recovering floor for small-scale sustainable energy production using ball screw which was able to achieve an efficiency of about 75%.
- Guided the next intake of 4-5 interns to guide them regarding the manufacturing of the prototype generator.

## SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES

- **Languages:** Fluent in English (C1), Urdu and Punjabi (Native)
- **Software Skills:** Microsoft Office, SolidWorks, Ansys, Lotus Shark, AVL Boost, Arduino, MATLAB, ChassisSim, MoTec i2 Pro, Pi Toolbox, McLaren ATLAS
- **Interests:** Military Aviation, Squash, Sim-Racing, Powerlifting

# SEBASTIEN BOSSCHAERT

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## PERSONAL STATEMENT

MSc in advanced motorsport mechatronics student and skilled engineer with a strong academic foundation in mechanical, electrical, and mechatronics engineering. Driven by a constant desire to learn and improve, eager to apply my skills in a cutting-edge and innovative environment.

## KEY ACHIEVEMENTS

- Built an autonomous robot as part of a student team for the Robotix's contest (in the context of Eurobot contest), achieving task completion within competition constraints (MSc Group Project)
- Designed a flywheel energy storage system, presented at the 2023 IEEE Energy Conversion Congress and Exposition (ECCE), demonstrating innovation in energy efficiency and storage technology (DOI: 10.1109/ECCE53617.2023.10362844)
- Provided support to gentlemen drivers of the Porsche Club Francorchamps with a race analysis setup (Racelogic VBOX)

## SKILLS & ABILITIES

- Python, Java, C, Matlab Simulink
- PI Toolbox
- Motec
- Solidworks
- AVL Boost
- COMSOL Multiphysics
- LTSpice XVII
- Microsoft Office
- French: Mother tongue (C2)
- English: Professional working proficiency (C1)
- Dutch: Limited working proficiency

## EDUCATION

**MSc in Advanced Motorsport Mechatronics,** Cranfield University, Cranfield, UK **October 2024 - September 2025**
*Extracurricular project*: Improving an AXSIM simulator by calibrating a triple-projector setup and ensuring proper functioning of the different subsystems

**Master in Management Science** **September 2023 - June 2024**
UCLouvain (LSM), Louvain-La-Neuve, Belgium
*Grade*: Magna Cum Laude
*Master thesis*: Development of a performance analysis tool for small breweries producing less than 300,000 hectolitres per year
*Soft skills*: Business Management, Team Management, Leadership

**MSc in Electromechanical Engineering** **September 2021 - June 2023**
UCLouvain (EPL), Louvain-La-Neuve, Belgium
Options: Mechatronics
*Grade*: Cum Laude
*Master thesis*: Design and prototyping of a magnetic suspension for a high performance flywheel energy storage system
*Soft skills*: Time Management, Attention to Detail, Creativity and Innovation, Research and Writing, Teamwork

**BSc in Engineering Science** **September 2018 - August 2021**
UCLouvain (EPL), Louvain-La-Neuve, Belgium
Majored in mechanics and electricity
*Grade*: Satis Bene
*Soft skills*: Complex Problem-Solving, Critical Thinking, Data Analysis, Project Planning and Management, Communication, Adaptability

## MSC IN ADVANCED MOTORSPORT MECHATRONICS INDIVIDUAL PROJECTS

- Developed advanced multivariable controllers for both lateral and longitudinal vehicle dynamics in a connected and autonomous vehicle project. Used H-infinity and LQG methods to achieve stable, responsive steering performance across varying speeds and driving conditions
- Modelled and simulated using Matlab/Simulink a J-damper suspension setup on a half-car model to assess the general behaviour and stability of the vehicle
- Modelled and simulated using Matlab/Simulink an aerodynamically-assisted steering system with an adjustable rear wing to improve cornering performance using a controller based on roll angle and lateral acceleration
- Tuned a modified Formula One engine on AVL Boost to meet the 2026 regulations with a focus on the intake system, turbo-boosting and camshaft phasing
- Installed a sensor suite on a Vauxhall VX220, collected and analysed data together with a racing driver to assess the behaviour of the car with PI Toolbox

## MSC IN ADVANCED MOTORSPORT MECHATRONICS GROUP PROJECT

**MSc Group Project: Conceptual design of a hydrogen ICE LMH car** **March 2025 - May 2025**

- **Project Overview:** Develop a concept of a hydrogen ICE car based on FIA/ACO regulations for WEC LMH cars.
- **Personal contribution:** Design, model and simulate a brake-by-wire system for a hybrid powertrain with a focus on the control system to optimise energy harvesting and braking performance. Validate the model with HIL test bench.

## MSC IN ELECTROMECHANICAL ENGINEERING GROUP PROJECT

**MSc Group Project: Autonomous Robot Design for Robotix's Contest (Eurobot)** **September 2021 - June 2022**

- **Project Overview:** Took part in a year-long student team (6 members) project for the Robotix's Contest (aligned with Eurobot), aimed at developing an autonomous robot capable of performing specific tasks under defined competition constraints
- **Mechanical Design:** Led and supervised the mechanical design of the robot, using CAD software to create and refine structural components, ensuring optimal performance and durability
- **Control System Development:** Developed control algorithms to enhance the robot's speed, accuracy, and robustness, achieving task completion within contest guidelines
- **Outcome:** Completed competition tasks within time constraints, contributing to the team's overall project success and enhancing both technical and team collaboration skills

## WORK HISTORY

**Research work at UCLouvain,** EPL, Louvain-La-Neuve, Belgium **August 2023 - September 2023**

University research

**Student Job**

- Collaborated in a team of 4 engineers to improve the flywheel energy storage system developed during the master thesis in mechatronics engineering
- Implemented an analytical model of an active magnetic bearing to optimise over 20 characteristics (e.g. mass, dimensions, materials,...)
- Validated the analytical model (using a 100 harmonics Fourier model) through FEA modelling

**U-Clip (Young Enterprise Project),** Ottignies, Belgium **September 2016 - June 2017**

Phone accessories reseller

**Chief Financial Officer**

- Founded a small company with 9 other students in the context of "Les Jeunes Entreprises" experience
- Led a team of three, managing the groups' tasks based on strengths and project priorities
- Raised funds by convincing potential buyers to support the production and launch of the phone holder
- Wrote the intermediate and final financial reports of the one year project

# Emma Cheetham

I am a highly motivated student, currently pursuing an MSc in Advanced Motorsport Engineering at Cranfield University who previously completed an industrial placement at Williams Racing in the Heritage department.

## Details

**Mobile:** +44 7469 894772
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**LinkedIn:** https://www.linkedin.com/in/e-g-cheetham

## Education

**Cranfield University – Advanced Motorsport Engineering (MSc)** **2024-2025**
Currently in progress. Courses to include:

- Vehicle dynamics, composites and structures, aerodynamics, and electronics and data acquisition.
- Both group and individual projects to be completed.

**University of Edinburgh – Mechanical Engineering (BEng (Hons))** **2019-2024**
First class degree awarded with courses including:

- Polymers and composites (87%), digital manufacture (84%), dynamics (80%), programming skills for engineers (76%), sustainable energy group design project (75%), and computational methods and modelling (70%).
- Individual project (71%) with the title "An investigation into the suitability of recycled carbon fibre composite for application in the impact structures of a Formula One car"

**Bournemouth School for Girls** **2012-2019**
**A-Levels:** Mathematics (A), chemistry (B), physics (B). **AS-Levels:** Computer science (B).

## Experience

**Williams Racing – Heritage Industrial Placement** **July 2022 – August 2023**

- Worked at the Goodwood Festival of Speed, helping to run the FW08, FW14B and FW19, including firing up the FW14B and FW19 and receiving the cars at the top of the hill and checking engine temperatures to make sure the cars were safe.
- Worked on shakedowns for the FW08, FW14B and FW19.
- Analysed ECU data on the FW19 to learn about engine diagnostics and to understand throttle control issues.
- Analysed VCM data on the FW14B to understand traction control issues.
- Reverse engineered metallic pit-equipment parts.

**Edinburgh University Formula Student (EUFS)**
**Vehicle Dynamics Manager** **July 2021 – July 2022**

- Managed a team (13), ensuring completion of the suspension components design and key deadlines met.

**Vehicle Dynamics Engineer** **July 2020 – July 2021**

- Designed the rear uprights and validated the final design using Finite Element Analysis.
- Worked on set-up of the car.
- Writing of design reports for EUFS for subsequent years to follow design process.

**Testing Engineer** **September 2019 – July 2020**

- Evaluation of car set-up to optimise performance.
- Researched into ideal theoretical car set-ups.

**UK Space Design Competition (UKSDC) – National Competition (Structural Engineer)** **2018 and 2019**

- Founded and led a school club, of 15 students, which designed a space settlement for the UKSDC.
- Liaison with school to organise accommodation and transport for participation in national final.
- Problem solving to create final design, at national competition, within 24 hour competition window.

**Rolls Royce – Work Experience (Design Engineer)** **July 2018**

- Redesigned the high-pressure stub shaft of the RB-199 engine as part of the systems design office.
- Presented the results of the redesign to senior engineers.

**July 2018**

**University of Liverpool Headstart Course – Summer School (Design Engineer)**

- Led a team of 6 students in the redesign of a plane using industry standard computer simulation.
- Collected feedback from pilot on initial design and redesign.
- Won the time trial against 9 other teams.

## Skills

**Software**

- Proficient in Python and MATLAB programming from university.
- Proficient in PI Toolbox from Williams and Cranfield.
- Proficient in Microsoft Office software and holding Microsoft Office Specialist Qualifications.
- Proficient in Siemens NX (Williams), Solidworks (EUFS) and Onshape (Edinburgh University).
- Proficient in NX Pre/Post (Williams), Abaqus (EUFS) and LS DYNA (BEng individual project).

**Proactive**

- Responsible for the driver selection at EUFS, whilst Vehicle dynamics manager, which involved liaising with a local karting track to take over 60 students.
- Took on organisation of 4th year group project at Edinburgh University by setting up meetings with supervisor, taking meeting minutes and booking of group workspaces.

**Self-motivated**

- Took an authorised interruption to study from Edinburgh University to complete a year-long placement at Williams Racing, as there was not an option to undertake a year-long placement as part of the degree.
- Self-management whilst my manager was part time for the first 4 months at Williams Heritage to ensure deadlines were met and my time was spent productively.
- BEng individual project required self-management of work to meet university deadlines and to ensure weekly meeting with supervisor were beneficial.

**Teamwork**

- Consultation between other department managers, with EUFS vehicle dynamics manager role, to ensure an efficient and cohesive design process.
- Worked with four other schools at the UKSDC to design a solution to the problem set within 24 hours. Was part of a team of 8 who presented the final design to over 150 people, including industry leaders.
- At Rolls Royce, worked with a deaf student on the design problem, which gave me an awareness of how to adapt working my working practices to be respectful of different conditions and inclusivity requirements.

**Leadership**

- Led a team of 6 students in the redesign of a plane using industry standard computer simulation, which involved communicating with a pilot to ascertain issues with the aircraft. We subsequently won the time trial competition.
- Led a team of 13, whilst Vehicle Dynamics Manager, which involved teaching younger members of the team about basic vehicle dynamics principles. Also undertook design of the rear-upright with a new team member to help them learn the design process.

**Determined**

- Analysed driver performance data from EUFS go-karting, to determine the final driver selection, also taking into consideration team member experience to ensure actionable feedback for the fastest driver and car combination.
- After my placement at Williams, I declined my place on the integrated masters at Edinburgh, instead graduating with a BEng, so that I could pursue an MSc in Motorsport Engineering from Cranfield, to improve my industry specific knowledge.

**Problem-solving**

- Self-proposed BEng individual project, based on recycled composites, to explore a new technology and how it could be applied to Formula One to help the industry reach sustainability goals.
- Design of carbon fibre mounts to relocate the fire-bottle on the FW22.

## Awards

- Made it to the final stage of the Tyler James Alexander Scholarship at Cranfield University and subsequent founding member of 'Tyler's club', which includes mentorship from industry leaders, including Paul Barnes.
- Shortlisted for the 'Excellence' award at the Williams Racing 2023 Early Careers award evening.

## Interests

**Motorsport:** F1, WEC, trials riding, and road motorbike riding.
**Recreational:** Wakeboarding, water-skiing, kitesurfing, running and baking.
**University:** Skiing, Clay Pigeon Shooting, and Formula Student

## References

Academics: Professor Filipe Teixeira-Dias, University of Edinburgh, f.teixeira-dias@ed.ac.uk, +44 7718 479348
Professional: Available on request.

# Robert Courtney

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*A graduate BEng Mechanical Engineer, currently studying a master's In Advanced Motorsport Engineering at Cranfield University, with a year of work experience in a fast-paced R&D aerospace company. I have a significant passion for motorsport engineering, with a speciality IC, EV powertrains and data analysis. I am highly motivated, eager to develop existing and new skills, and thrive within team environments with an ambition to continually learn.*

## Education

Oct 2024 – Present

### **Cranfield University** | MSc Advanced Motorsport Engineering

Relevant courses:
Motorsport Electronics and Data Acquisition – 76% (A)
Motorsport Powertrains – 75% (A)
Composite Structures for Motorsport – 72% (A)
Motorsport Vehicle Dynamics – 70% (A)
Motorsport Aerodynamics – 70% (A)

Sep 2020 – July 2024

### **The University of Edinburgh – Awarded First Class** | BEng Mechanical Engineering

Dissertation Title: Design and analysis of a towed test rig for investigating translational propeller flight aerodynamics (awarded a **first class** grade)

## Engineering Work Experience

### Data Engineer Intern, Virtuosi Racing F4

March – Present

- Trackside data engineer intern for Virtuosi Racing F4 during the 2025 FIA British F4 Championship
- Tasked with downloading, redistributing data from cars, **processing** on-board video, assisting the race engineers with **data analysis** and vehicle reliability checks using **WinTax DAQ**.
- Assisting with trackside competitor analysis and developing in-house **MATLAB** models to optimise vehicle performance.

### Mechanical Engineer, Flowcopter LTD

June – Sep 2023, Jan – Aug 2024

- Tasked with **developing** an R&D aerospace drone powered by **hydraulic digital displacement technology** for heavy lifting capabilities.
- **Lead** of the translation flight aerodynamic **test programme**, responsible for **designing**, **operating** and **analysing** results from a test rig, with a focus on observing the aerodynamic effect of large fixed-pitch composite propellers during translational flight.
- **Researched** and **designed** a translational flight propeller test rig, lightweight cooler pack, propeller speed sensing unit, 50L fuel tank, drone testing facility and applications cargo box.
- **Co-author** of a published paper titled (European Rotorcraft Form): Flight Performance of a Multirotor Unmanned Aerial Vehicle with Digital Displacement Hydrostatic Transmission**.**
- **Developed** strong Design for Manufacture Skills working through the entire design cycle of components, gaining hands on experience in machining, fabrication and assembly.
- **Conducted** R&D experimental tests on heat exchanger pressure drop and speed sensor sub-assemblies, **collecting** and **analysing** data to **validate** and enhance design decisions.
- **Developed skills** in Solidworks, ANSYS FEA, Dewesoft data acquisition system and technical drawings

## Engineering Extra Curricular

Sep 2021 – Aug 2024

**Formula Student –** Head of Mechanical Engineering, EV Powertrain, Vehicle Dynamics

- Team lead within the Edinburgh University Formula Student team with 120 current members.
- 3rd year **Head of Mechanical Engineering**, involving **planning, managing,** and **overseeing the design of over 40 mechanical engineers** to develop the UK's first student-built autonomous race car.
- 2nd year member of the **Powertrain sub-team** and **lead** of accumulator **design and manufacturing**.
- 1st year member of **Vehicle dynamics team** focused on brakes, dynamical modelling and simulation, suspension, wheel assemblies.
- Working in a **team** to **design and manufacture** pushrod and A-arm configuration, suspension inserts, copper brake lines, Aerofoil inserts, Driveshafts, Accumulator and EV components.
- **Experience** and **knowledge** of manufacturing **carbon fibre** components and various other composite materials (FR4, fibre glass), using **finite element analysis** to analyse component strength and failure modes, using various **coding languages** (MATLAB and python) to **simulate** and **model** wheel load cases and suspension arm stresses.

## Rocketry

Sep 2015 – May 2025

- Long term involvement in amateur rocketry including the **design**, **building**, incremental **testing** and **launching** of my own fleet of high-powered rockets.
- Gained **Level 2** high powered certification in 2019 aged 16 (one of youngest in UK)
- **Awarded** Young Rocketeer of the year at the International Rocket Week (IRW) in 2016.
- Technical experience includes use of **aerodynamic modelling**, composite materials, high strength epoxy resins, building electronic bays, making deployment charges using black powder, working with ammonium perchlorate solid rocket motors, use of ground support equipment and considering **safety** aspects of launches.
- **Designed** and **built** homemade Arduino data acquisition system for inflight use as an avionics bay
- Over 9 years of **modelling** and s**imulating** vehicle, aerodynamics and flight characteristics. Developed skills in **analysing data** and changing parameters to best optimise our desired flight profile.

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## Engineering Skills

**CAD –** CATIA V5, SolidWorks, Fusion 360, Autodesk Inventor
**DAQ Software -** McLaren ATLAS, WinTax4, MoTeC i2, Pi Toolbox, DeweSoft
**Software** – ANSYS Mechanical, AVL Cruise M, Altair HyperMesh,
**Programming** – MATLAB 2024b, Python, C++

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## Skills and Achievements

### Scouting/World challenge:

Aug 2008 – March 2020

- Achieved **Gold Scout** award in 2017
- Completed my Bronze, Silver and Gold **Duke of Edinburgh awards**
- Completed **World Challenge award** in Vietnam
- Developed skills in **Independent thinking**, **teamworking** and **problem-solving.**

### Leadership Roles:

Sep – May, 2016/2019

- Junior house captain and senior house captain in final year.
- Presented to 200+ people regularly
- Experience improved my **public speaking**, **presentations** and **leadership** skills.

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## References

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Andrew Moony
Primark supervisor
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# Graham Cowles

www.linkedin.com/in/grahamcowles

## Personal Statement

Young but experienced engineer with a passion for all things with wheels and a background in polymer materials engineering research. Interested in diving deeper into the world of cutting edge materials and their applications in the industries I love most. Currently looking to grow my motorsports career in the composites or tyre engineering field, with interests in material modeling, characterization, and vehicle performance engineering.

## Education

**Cranfield University** - Cranfield, UK

- Advanced Motorsport Engineering MSc, Graduation September 2025
    - Modules:Motorsport Vehicle Dynamics, Motorsport Electronics & Data, Motorsport Structural Analysis, Motorsport Aero & CFD, Composite Structures
- Led composite structures group for Group Design Project designing an entire WEC Hypercar chassis and impact structures in just 11 weeks
- Researching motorsport tyre adhesion mechanics and material characterization
- Inaugural member of Tyler James Alexander scholarship in partnership with Mclaren and Penske Racing, providing early mentorship in the motorsports industry and training students to be effective mentors going forward

**Western Washington University** – Bellingham, WA, USA Cumulative 3.7 GPA – Dean's List

- Polymer Materials Engineering major, Materials Science minor, Graduated June 2023
    - Key Modules: Polymer Chemistry, Characterization of Materials, Polymer Compounding, CAD Surfacing & CNC, Advanced Composites
    - Heavily lab based program allowing for hands on plastics processing, composite layup, tooling manufacturing and materials lab experience
    - Experienced with design of experiments, composites manufacturing, and materials characterization techniques (mDSC, DMA, Rheology, FTIR, SEM and more)

## Work Experience

Composite Design & Vehicle Dynamics Engineer - *APP EV Systems* *June 2022 - July 2024*

- Worked on the design and build of an electric conversion kit for classic Porsche 911's, building a system designed around maintaining as much of the vehicle's original driving experience and dynamics as possible, all while requiring no modifications to the original chassis
    - Responsible for design of all composite parts and tooling, including carbon fiber subframes and impact resistant carbon/kevlar BMI matrix battery boxes
    - Refined structures to keep final weight within 100 kg of the stock ICE vehicle, with identical distribution
    - Worked alongside professional test drivers to tune vehicle dynamics to closely match ICE vehicle on track
    - Presented prototype car and battery system at SEMA show 2022, where the system won a SEMA Global Media Award and was runner up for best new electric vehicle product

- Additional drafting work on composite parts for OEM partners of APP Apollo Aero division

Thermoplastic Composites Researcher - *Western Washington University* *Sept 2022 - June 2023*

- Performed material characterization on PEEK and LM-PAEK matrix composites with the goal of expanding the material library of modeling software for industry sponsor
- Working with experimental material models developed new techniques for analysis of historically unpredictable polymers
    - Refined isoconversional analysis methods to characterize rate dependency of PAEK crystallization and its effects on component mechanical properties
    - Uncovered largely unexpected behavior with addition of carbon fiber reinforcement
- Established largest known dataset on LM-PAEK thermal behavior

Vitrimer Materials Research Assistant - *Western Washington University* *Dec 2021 - June 2022*

- Worked with industry sponsor company Mallinda to help develop and better understand vitrimers for use in composite materials
- Ran modulated DSC, DMA, and rheometer samples, analyzed complex thermal and dielectric data to help improve vitrimer material processing methods and further product development

Mechanic - *Edge and Spoke, Earls Bike Shop, APP EV Systems* *September 2016 - July 2024*

- 7+ years of professional experience working as a mechanic for automobiles, mountain bikes, musical instruments, and shop machinery
- Taken on many different roles over the years, including experience with everything from sales and customer service to road car engine building and high end mountain bike suspension and chassis tuning for World Cup racing

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## Skills, Interests, and Activities

Digital Skills

- Experienced in multiple CAD Suites, including CATIA V5 and Solidworks
    - Additional experience with composites FEA in both systems
    - Experienced with CAM/CNC in Solidworks and HSMWorks
- Use of TA Instruments machines including mDSC, TGA, Rheometers, DMA, Trios and Universal Analysis software
- Academic use experience in Matlab, Python, and R

Home Composites Work

- Passionate about bringing polymers and composites down to the consumer level, and improving the accessibility of these technologies for home enthusiasts, hobbyists, and budding engineers
    - Personal projects include automotive parts, mountain bike frames, and guitars
    - Constantly exploring affordable composite tooling options, such as 3D printed molds and reusable vacuum bagging materials

WWU Formula SAE Aerodynamics and Chassis team

- Responsible for composite laminate designs and tooling for all aerodynamic and structural components on 2022/23 car
- Led a small team of polymer materials and manufacturing engineering students to ensure all tooling and components were completed on time and up to quality standards

# DIVYA DROLIA

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## PERSONAL STATEMENT

Aspiring motorsport engineer with interdisciplinary academic training in mechanical and electrical engineering as well as 3.5+ years of experience in product design engineering at Cummins Inc., a global power solutions leader. Recently gained valuable work experience as a Data Engineer at Venturini Motorsports for part of the 2024 ARCA Menards Series. Currently a postgraduate student pursuing the Advanced Motorsport Mechatronics MSc at Cranfield University. Champions lifelong learning and makes the most of mentorship and coaching opportunities. Continually invests in personal and professional development opportunities, such as the Dale Carnegie Course, to grow as an individual.

## EDUCATION

**MSc Advanced Motorsport Mechatronics, Cranfield University, Cranfield, UK** **Oct 2024 - Sep 2025**

- Thesis - Formula E (Gen3 Evo) Race Simulation and Strategy Optimization (TBD).
- Group Design Project - Hydrogen Hypercar: Designed a brake-by-wire system in MATLAB and validated model & controller performance through hardware-in-the-loop simulation.
- Modules - Motorsport Electronics & Data Acquisition, Motorsport Vehicle Dynamics, Motorsport Powertrains, Vehicle Control Applications, Mechatronics Modelling for Vehicle Systems, Advanced Control & Optimization, Embedded Vehicle Controls Systems, Business of Motorsport.

**BSc Mechanical and Electrical Engineering, Kettering University, Flint, USA** **Sep 2017 - Sep 2022**

- GPA: 3.95/4.00, Summa Cum Laude.
- Thesis - Guidelines to Improve Simulation Based Product Development of Exhaust-Manifolds.
- Mechanical Engineering Senior Design Project - Race Line Optimization using MATLAB's Optimization Toolbox.
- Electrical Engineering Senior Design Project - Smart Pushcart with Self-Levelling and Autonomous Braking.

## WORK EXPERIENCE

**JHR Developments, Derbyshire, UK, Data Engineer** **February 2025 - Present**

In operation since 1995, JHR Developments currently competes in the FIA F4 British and GB3 championships.

- Managed data acquisition and monitored vehicle and DAQ system health using Pi Toolbox and MS Excel for 3 cars, supported race engineering activities, and carried out competitor analysis using TSL Timing.
- Improved data analysis tools and trackside SOPs for vehicle health and DAQ system health monitoring.

**Argenti Motorsport, Northamptonshire, UK, Data Engineer** **October 2024 – January 2025**

Established in 2019 as a kart team, Argenti Motorsport currently competes in the FIA F4 British and GB3 championships.

- Designed a start light system using real-time programming in Arduino to aid drivers with practice starts.
- Managed data acquisition and monitored vehicle & DAQ system health using WinTAX for 3 cars at test events.

**Venturini Motorsports, Concord, USA, Data Engineer** **March 2024 - May 2024**

A professional stock car racing team, Venturini Motorsports competes in the ARCA Menards Series and operates the most coveted NASCAR Driver Development Programmes in partnership with Toyota Racing Development.

- Automated pre-race and post-race data analysis in MS Excel through VBA, reduced throughput time by ~90%.
- Installed DAQ systems, calibrated sensors, and logged data on 6 cars for the open test at Kansas Speedway.
- Travelled with the team to provide trackside support for upto 5 cars at 3 races - General Tire 200, Tide 150, and Music City 150. Set up timing and scoring feeds, maintained run logs and analysed data from practice sessions.
- Tuned upto 8 dampers on a shock dynamometer to achieve desired damper behaviour for each of the cars.
- Documented setup changes and driver feedback during DIL simulator session for vehicle setup development.
- Managed inventory and measurement of chassis and suspension components for vehicle virtual twin modelling.

**Cummins Inc., Fridley, USA, Senior Product Design Engineer** **Nov 2021 - March 2024**

The Cummins Power Systems Business Unit delivers comprehensive power generation and storage solutions for all applications, including but not limited to mining, oil and gas, data centre, healthcare, commercial, rental and home.

- Developed air intake, fuel supply, and exhaust subsystems for a 1MW standby diesel genset. Collaborated inter-departmentally with 75+ internal and external stakeholders in the USA, UK, and India to deliver the project.
- Led a 15+ member cross-functional team to ensure regulatory compliance of the genset in all markets.
- Managed seismic and wind certification to HCAI and IBC standards for the genset with The VMC Group.
- Conducted 4 prototype builds of the above-mentioned genset at the Fridley plant. Maintained bill of materials, tackled part procurement, manufacturing, re-work, storage and tracking, and directed day-to-day build tasks.

**Cummins Inc., Columbus, USA, Product Design Engineer Co-Op** **Aug 2020 - Dec 2020**

An industry leader in engine technology, Cummins Engine Business Unit offers diesel, natural gas, alternative fuel, and fuel agnostic engines along with battery electric and fuel cell power solutions for on and off highway applications.

- Headed new exhaust-manifold development through multidisciplinary design optimization in modeFRONTIER.
- Guided design of experiments to study the relationship between an exhaust manifold's 13 design and 6 performance parameters through efficient exploration of the total available space claim.
- Refined exhaust-manifold design via topology optimization using GENESIS within Ansys to meet modal and factor of strength performance targets with minimum weight.
- Created multiple parametric exhaust-manifold models and associated subsystem assemblies in PTC Creo.

**Cummins Inc., Columbus, USA, Product Design Engineer Co-Op** **June 2019 - Oct 2019**

Since 1919, Cummins Inc. has innovated to deliver reliable, powerful and efficient diesel engines to its customers worldwide and grown into a trusted global power leader with a continually expanding product portfolio.

- Performed topology optimization on a current product exhaust-manifold for weight reduction using GENESIS within Ansys. Wrote an exhaust-manifold topology optimization process for similar future projects.
- Updated 3 drafting standard work documents for all valve components and gaskets in the air handling system.
- Revised the 'Turbocharger Test Cell Pipe Work Installation' engineering practice. Identified 10+ high volume air handling elbow options, compiled associated technical data, and updated installation guidelines for each.
- Analysed field test data in MATLAB to validate a new predictive cruise control for on-highway vehicles.

**Cummins Inc., Stoughton, USA, Product Design Engineer Co-Op** **June 2018 - Dec 2018**

The Cummins Emissions Solutions Business Unit provides aftertreatment systems that allow customers to meet emissions regulations for on-highway, off-highway and power generation applications globally.

- Developed an interactive, multi-function tool in MS Excel to communicate offered aftertreatment product specifications, reduce part proliferation, and support maintenance of customer requirements database.
- Created engineering drawings and performed DVA for after-treatment packaging in PTC Creo.

## EXTRACURRICULAR ACTIVITIES

**Kettering University LEADERS Fellowship, Flint, USA, Board Member** **Oct 2021 - March 2024**

Led by alumni, the organization's mission is to grow Kettering University's most promising leaders, and it aims to do so primarily through coaching, mentoring and by investing in leadership development opportunities for the fellows.

- Provided support to applicants through coaching, both in a 1-on-1 and group setting, and application review.
- Coached and mentored fellows for 100+ hours to aid personal and professional development.
- Managed the board's relationship with 30+ fellows, primarily addressed concerns and increased engagement.
- Designed and delivered a vision development programme to 5 fellows and alumni at Deese Weekend 2024.

**Kettering University Baja SAE, Flint, USA, Team Member** **Sep 2017 - Sep 2021**

Run by students, the team designs and builds single-seater off-road vehicles and competes with 100+ teams from around the world in the Baja SAE Collegiate Design Series competitions organised by SAE International.

- Re-designed the vehicle's braking system to improve packaging and achieve a weight reduction of over 50%.
- Manufactured 2 bucket seats and associated moulds using carbon fibre and high-density machinable foam.
- Undertook part procurement, part manufacturing, and vehicle assembly for each year's new vehicle build.
- Travelled with the team to provide trackside support at nine collegiate events across the USA.

# TOLUWALASE EGBERONGBE

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## EDUCATION:

**Cranfield University**
Motorsport Mechatronics Msc

**De Montfort University**
Mechanical Engineering BEng – Upper Second

**London Design & Engineering UTC**
A-Level Maths – D, A-Level Physics – E, Engineering Diploma – D*D*

**Sarah Bonnell School**
10 GCSEs Grade A*-C, including: Maths (A), Triple Science (ABB), English Lang. & Lit (6,5)

## WORK EXPERIENCE:

**Tideway (CVB) (February 2019 - February 2019)**

- Worked with the team on the upcoming Thames Tunnel project.
- Worked in the BIM team, where I was able to gain insight of what design modelling within the construction industry looks like and was tasked with producing an acoustic shed which was used for the tideway tunnel project.
- A defiant moment of the week was when I was introduced to CAD software *sketch-up* however I was able to overcome this and produce a model for an acoustic shed which was my main task for the week.

**A J Morrisroe & Sons Ltd (July 2018 –August 2018)**

- Using CAD software *Autodesk Revit* and *Solidworks* to model different projects.
- Shadowing the site engineer learning about the health and safety requirement.
- Deepened my understanding of health and safety on a construction site which includes always wearing the correct PPE and surveying my surroundings for any potential dangers for me or other workers.

## LEADERSHIP EXPERIENCE:

**DMU Student Leader (December 2019 – June 2022)**
Engagement Associate, Race equality Advisor, Secretary

- Reviewed the level of student engagement outside of their academic routes.
- Created the vision and objective of the programme which is to "Increase Establish Maintain", with the focus to increase and maintain student engagement in extracurricular activities and increasing the amount and knowledge of activities between students.

**DMU Racing (Formula Student) (September 2019- June 2022)**
Senior Team member

- Designed, modelled in *Creo Parametric* and manufactured a chassis and shoulder brace for the 2021 car.
- Conducted analysis using *Ansys* on the brace to visualise the effect it has on the chassis thus providing an engineering solution under time constraints.
- Manufactured both braces, painted them and found fixing solutions to attach to the Chassis via working concurrently with machine technicians to review and engineer the optimum component and solution.

**Engineering Society DMU (September 2021 – March 2022)**
Robotics Competition Project Leader

- Delegating roles and tasks to ensure that every student has an active involvement in the competition preparation as well as making progress reports from meetings and discussions
- Handling the budget to make sure every needed expenditure is calculated in while also staying under budget
- Managerial oversight over other students to ensure the team stays focused on finishing the moving robot

## ACADEMIC PROJECTS:

### UniBots Robotics Competition:

➔ The robotics project team developed a ball-collecting mechanism using a drum with brushes and finalized the design with a flap system for sorting balls into ramps based on type.

- ➔ Team members worked on CAD modelling, electronics integration (e.g., Raspberry Pi setup), and programming, with regular design reviews to coordinate tasks.
- ➔ The robot is designed to meet competition rules, including size constraints (300x300 mm starting size) and autonomous operation within a specified arena layout.
- ➔ Future steps include finalizing the CAD model, securing funding, completing 3D printing, and refining the control system for testing before the competition.

## Formula Student Autonomous Vehicle Study:

- ➔ The study investigates technologies for autonomous vehicles (AVs) in Formula Student AI competitions, focusing on usage of *IPG Carmaker* and *MATLAB-based ROS* for sensor-driven vehicle control.
- ➔ Key technologies include *LiDAR*, cameras, GPS, and image recognition models like CNNs, all integrated to help the vehicle navigate a track autonomously under FSAI rules.
- ➔ Discusses challenges in AV development included but not limited to sensor limitations in adverse weather, public trust issues, liability concerns, and economic barriers.
- ➔ Future work involves refining algorithms for improved obstacle detection, motion control, and adherence to IMechE's driverless vehicle standards, aiming to advance toward fully autonomous levels.

# Gaspar Garcia

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## Personal Statement

Motivated and detail-oriented engineer with hands-on motorsport experience and a strong foundation in CAD and CFD. Passionate about high-performance design, I aim to contribute to cutting-edge component development in Motorsport through innovative and reliable mechanical solutions.

## Education

MSc Advanced Motorsport Engineering, Cranfield University, UK (Exp. 2025)

- Modules: Structural Analysis, Electronics and Data Acquisition, Vehicle Dynamics, Aerodynamics, Computational Fluid Dynamics, The Business of Motorsport, Composite Structures, Powertrains
- Group Design Project: Hydrogen LMH where I developed Hydrogen Storage system. Made the initial Vehicle model in MATLAB to assess different initial concepts which were optimized through ChassisSim and Motec

BEng Aerospace Engineering (2:1 Hons), Brunel University London, UK (2020–2024)

- Key Modules: Applied Aerodynamics and CFD, Flight Mechanics and Aircraft Design, Thermodynamics and Heat Transfer, Flight Testing and Analysis
- Dissertation: Design and Optimization of a Formula Student Diffuser

## ENGINEERING & MOTORSPORT EXPERIENCE

Kart Mechanic, Marlon Kart Racing Team, Spain (2023–2025)

- Analysed Data with RaceStudio 3 to refine chassis and carburettor setup, improving driver lap consistency
- Rebuilt karts after incidents, enabling race-weekend continuation
- Performed combustion chamber inspections between sessions to ensure compliance and peak performance
- Supported drivers from five nationalities; praised for concise, bilingual feedback under pressure

Design Engineer Intern, Pall Aerospace, UK (2022–2023)

- Modelled components with surface and solid techniques in CATIA V5 to meet design specifications
- Produced BS8888-compliant drawings and collaborated with draughtsmen to release parts for manufacture
- Managed files and documents in Windchill PLM while coordinating with cross-functional teams across sites
- Incorporated manufacturing constraints learned from shop-floor liaison into updated designs

## OTHER EXPERIENCE

Real Estate Agent assistant, Jessica Hill Real Estate, Spain (2024–2025)

- Coordinated property viewings and accommodated last-minute schedule changes, strengthening time-management skills
- Engaged with diverse stakeholders, enhancing interpersonal communication

Residential Building Caretaker, Gestoria Lopez y Lopez Valencia, Spain (2020-2022)

- Worked with contractors to resolve building issues such as elevator repairs
- Assisted residents with daily tasks, demonstrating reliability and initiative

### Private Teacher, Spain (2018-2019)

- Provided mathematics tutoring that helped a pupil exceed expected academic outcomes

### Waiter, Bar Mercat, Spain (2016-2018)

- Delivered high-volume customer service in Spanish and English and mentored new staff

### Work Experience, RBM Motorsport, Spain (2016)

- Shadowed Porsche technicians, learning workshop fundamentals and basic maintenance on 911 models

## Key Projects

### Formula Ford Restoration, Cranfield University, UK (2025)

- Led complete restoration, rebuilding gearbox and water pump to working condition
- Tested and analysed damper performance to verify component health
- Managed project schedule and parallel tasks to meet hand-over deadlin

### Hill Climb Car Development, ASR TEAM, Spain (2023–2024)

- Modelled and iterated an FIA-compliant diffuser in CFD to improve aerodynamic efficiency
- Validated simulation with on-track flow-visualisation techniques
- Performed On-track validation through visualization techniques to make sure the simulation results --- where representative
- Designed and manufactured race-ready components and supported car operations

### Formula Student, Brunel Racing, UK (2020–2022)

- Supported manufacture and assembly of aerodynamic components to tight deadlines
- Created wiring loom according to electrical-team specifications
- Collaborated with teammates to deliver quality parts including diffuser and side panels

## Skills

- **CAD / PLM:** CATIA V5, SolidWorks, Windchill
- **Simulation:** ANSYS Fluent, ChassisSim, MATLAB/Simulink
- **Data & Race Ops:** RaceStudio 3, MoTeC i2
- **Programming:** MATLAB
- **Standards:** BS8888 drawings · GD&T basics
- **Languages:** Spanish (Native), English (Fluent), Italian (Intermediate)

## Achievements

- Won the Valencian Hill Climb Championship
- Italian Cambridge House Award during A levels
- Several Poduims in the Valencian Karting Championship

## Interests

- Sim-racing endurance leagues
- Karting (KZ)
- Vehicle Restoration
- Attend/watch formula 1 and other forms of motorsport

# ÁLVARO GARCÍA VALLE

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Cranfield University, Bedfordshire LinkedIn

## PERSONAL STATEMENT

An enthusiastic engineer, currently pursuing a double MSc degree in Industrial Engineering at ETSEIB - UPC, Spain, and Advanced Motorsport Mechatronics at Cranfield University, UK, to enhance technical skills in race engineering, performance optimisation and race strategy. Experience includes leading the management department of ARM2u, representing Spain in the Cybathlon organised by ETH Zurich, which contributed to the development of strong leadership and project management skills. Coupled with MotoStudent eRacing ETSEIB team power department, provided an accelerated hands-on expertise in electric vehicle systems and race-ready engineering innovation. A background in piano has fostered discipline and creativity, while a passion for motorsport drives a continuous pursuit of innovation within the industry.

## KEY ACHIEVEMENTS

- Obtained the highest possible grade in my BSc in Industrial Engineering Technologies at UPC-ETSEIB Thesis: 10/10. Design and prototyping of a mechanical keyboard of compact format.
- Attended Engihack 2023 by Enginyers Industrials de Catalunya, placed 4th. Design of a supply chain for urban distribution of goods using the metro network at nighttime.
- Attended Cybathlon Challenge 2022 and 2023 editions in person at ETH Zurich as representatives of Spain.

## EDUCATION

**Double MSc in Advanced Motorsports Mechatronics, Cranfield University, Cranfield, UK** **October 2024 - September 2025**

- **Modules:** Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Motorsport Powertrains, Vehicle Control Applications, Advanced Control and Optimisation, Mechatronics Modelling for Vehicle Systems, Embedded Vehicle Control Systems, Business of Motorsport. **Group Design Project**: Hybrid Hydrogen LeMans Hypercar.
- **Projects:**
  - M Powertrains – F1 2026 Technical regulations Simulations. AVL Boost.
  - Mechatronics Modelling Vehicle Systems – Formula E Gen 3 EVO Quarter Car modelling. MATLAB/Simulink.
  - M Vehicle Dynamics. 3rd place on Virtual Race Simulation, Data Performance Engineering. MoTeC i2.
  - ACO – Development automated steering control system. MATLAB/Simulink.
  - VCA – Active aero tilting rear wing control system. MATLAB/Simulink.
  - EVCS – F1 DRS analysis and optimisation. MATLAB/Simulink/dSpace/C/C++.
- **AXSIM Simulation**: Extracurricular project, Rebuild and recalibration of a F1 simulator. DBox actuators, Yaw motion system. When completed: Race/Data/Performance Engineering, Race Strategy, DIL simulation, Real time telemetry.

**Double MSc in Industrial Engineering, UPC - ETSEIB, Barcelona, Spain** **September 2023 - June 2025**

- Speciality in Mechanical Engineering.
- **Modules:** Machine Technology. Process Control, Advanced Electronics, Theory of Structures, Industrial Scheduling, Business and Organisation, Hydraulic Machines (Turbomachines), Constructions and Industrial Architecture, Integrated Manufacturing Systems, Chemical Technology, Energy Technology, Transports, Installation Projects, Human Resources.

**BSc in Industrial Engineering Technologies, UPC - ETSEIB, Barcelona, Spain** **September 2016 - June 2023**

- **Modules:** Calculus, Linear Algebra, CAD, Diff. Equations, Numerical Methods, Informatics, Mechanics, Thermodynamics, Materials, Electromagnetism, Economics and Business, Statistics, System Dynamics, Machine and Mechanism Theory, Continuum Mechanics, Statistical Techniques for Quality, Electrotechnics, Environmental Technology and Sustainability, Technology and Selection of Materials, Optimisation and Simulation, Strength of Materials, Fluid Mechanics, Automatic Control, Manufacturing Systems, Electronics, Heat and Mass Transfer, Electrical Machines, Organisation and Management, Project Management.
- **Thesis:** Design and prototyping of a mechanical keyboard of compact format. Grade: 10/10.
  - Designed and built a fully functional custom mechanical keyboard from scratch, integrating mechanical design, electronics, and software. Led the full development cycle from research to prototyping, refining multidisciplinary engineering skills.
  - Developed custom PCBs in KiCAD (JLCPCB manufacturing), modelled housing in SolidWorks, and optimized for 3D printing. Programmed firmware in QMK and fabricated the prototype using a Prusa i3 mk3s+ with PLA, delivering a working model under tight constraints.

## CAREER HISTORY

**MotoStudent eRacing ETSEIB, Barcelona, Spain, Team Member** **March 2024 - Sept 2024**

Power Department

- Contributed to the Power Department in the design, assembly, and optimisation of EV batteries and dashboard systems for the eRacing ETSEIB MotoStudent team.
- Enhanced dashboard functionality and safety features through data-driven improvements.
- Collaborated on battery efficiency initiatives, focusing on energy density and thermal management.

**Ajuntament de Barcelona, Barcelona, Spain, Engineering Internship** **February 2023 - March 2024**

Urban Engineering and City Planning Department - Barcelona's City Town Hall

- Conducted technical assessments of urban infrastructure with a focus on sustainable design and engineering efficiency, enhancing city planning through targeted improvements in traffic flow and mobility patterns.
- Contributed to smart city solutions by integrating data-driven technologies to optimise public spaces and sustainability.
- Collaborated across interdisciplinary teams to draft technical reports and proposals for large-scale projects, emphasising innovation and regulatory compliance in urban development.

**ARM2u Team, Barcelona, Spain, Chief of Management Department** **February 2021 - July 2023**

Biomedical Engineering Team at Cybathlon by ETH Zurich from 2021 until 2023.

- Led multidisciplinary teams in high-pressure environments, managing logistics, budgeting, and sponsor relations to drive project success.
- Applied agile Scrum methodologies in Jira to optimise workflows and meet tight deadlines.
- Provided technical expertise across Mechanics and Electronics departments, ensuring cross-functional alignment and enhancing project efficiency. Strengthened leadership skills through dynamic team coordination and strategic decision-making.
- Attended Cybathlon Challenge 2022 and 2023 editions in person at ETH Zurich as representatives of Spain.

**BestCourse, Barcelona, Spain, Secretary and Monitor** **May 2018 - September 2019**

International Educational Consultancy Services

- Organised and led 5+ international educational programs, engaging over 100 students in immersive cultural experiences across the US, Canada, and UK.
- Facilitated language and cultural development as a program monitor, ensuring enriching experiences for participants.
- Managed administrative operations and strengthened coordination and cross-cultural communication skills through hands-on leadership in diverse settings.

## ACADEMIC PROJECTS

- Developed a dynamic, multi-level 2D tank arena game in Python, featuring two-player functionality using PyGame, showcasing programming skills in game mechanics and interactive design.
- Engineered a smart IoT-enabled thermostat using Arduino, complete with a remote-control Android app for seamless home temperature management—showcasing advanced skills in IoT integration, automation, and mobile interface design.
- Conceptualised an innovative hydrogen refuelling station tailored for intercity buses operating between Reus and Tarragona, emphasising sustainable energy solutions and eco-friendly public transportation.
- Enhanced an autonomous night sky quality meter, optimising its performance to provide precise, real-time measurements of celestial conditions, contributing to the advancement of environmental monitoring.
- Attended Engihack 2023 by Enginyers Industrials de Catalunya, placed 4th. Designed an innovative supply chain for the urban distribution of goods utilising the metro network during nighttime hours, strategically aimed at reducing the volume of urban packaging deliveries while enhancing efficiency and sustainability in city logistics.

## SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES

- **Computer Skills**: Python, C/C++, MATLAB, Simulink, Simscape, Office, SolidWorks, ANSYS, Diamonds, Minitab, KiCAD, AutoCAD
  - Currently working on: McLaren ATLAS, Pi Toolbox, AVL Boost, MoTeC i2, Dymola, CarMaker, LabView
- **Languages**: Spanish (Native), Catalan (Native), English (Fluent Professional, C1) and French (Intermediate, B2).
- **Interests**: Music studies: played the piano from 4 years old until 19 years old. Sports: played indoor football during High School and at Cranfield University.
- **Licences – Driving:** B category driving Licence (Car).

# GABRIEL GOMES RECCHIA

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3 Mitchell Road, MK43 0TE, Wharley End, Cranfield, UK

## PERSONAL STATEMENT

Mechanical motorsport-orientated engineering student, passionate about powertrains technology, as well as racing and science history. Collecting automotive experiences one after the other and desiring to participate in the adventure of motorsports engineering, fueled by a passion for motorsport constructed through watching Formula 1 and Le Mans races since childhood, and the cutting-edge innovations developed on cars. Aspiring to enter powertrain engineering, therefore planning on realising a master thesis on hydrogen internal combustion engines.

## KEY ACHIEVEMENTS

- Achieved theoretical 40% cutting time economy, starting from a 15% initial objective of industrial processes of manufacturing Formula 1 engine parts, under the motorsport time and quality constraints, inside a state-of-the-art motorsport and aerospace manufacture
- Led a team of two students with no automotive background to successfully redesign a Formula Student electrical powertrain in six months

## EDUCATION

**MSc in Advanced Motorsport Engineering, Cranfield University, Cranfield, UK** **October 2024 - September 2025**

- **Double degree scheme** with University of Technology of Troyes
- **Modules:** Motorsport Powertrains; Motorsport Vehicle Dynamics; Motorsport Electronics and Data Acquisition; Motorsport Aerodynamics; Business of Motorsport; Motorsport Structural Analysis; Computational Fluid Dynamics for Motorsport; Composite Structures for Motorsport
- **Group Design Project:** Design of a hydrogen internal combustion engine for a Le Mans Hypercar prototype, in a team of 6-12 people

**Mechanical Engineering Degree, UNIVERSITY OF TECHNOLOGY OF TROYES, Troyes, France** **February 2020 - September 2025**

- **Relevant Modules:** Physico-Chemistry of Metal Solids; Thermodynamics; Principles of Probability; Algorithmics; Structures and Beams Theory; Introduction to Solid Continuum Mechanics; Properties of Materials; Automation and Controls; Electrical Actuators; Initiation to Mechatronics; Physical Measurements and Uncertainties; Computer-Aided Design for Geometric Modelling; Design Theory and History; Engineering and Design; Analysis and Dimensioning of Mechanical Systems; Conventional Manufacturing Methods; Advanced Manufacturing and Industrialization; Choice of Materials; Production, Organization and Management; Mechanical Design in a Sustainable Context; Innovation Management; Movie Writing, Making and Technology; French Business, Commercial and Common Law

## WORK EXPERIENCE

**MECACHROME, Aubigny-sur-Nère, France,** **February 2023 - July 2023**
**Motorsport Industrial Methods Intern**
Precision Machining and Manufacturing

- Updated and created machining processes (3 and 5-axis milling) for internal engine parts for Alpine F1 Team
- Developed skills in CAM and CAD softwares, tool choice, machining strategies, blank design, G-Code programming
- Targeted a minimal 15% cutting time economy, resulting in a 40% cutting time economy in simulation; >80% of propositions resulting in significant gains

**GARAGE DU TRÈFLE, Oisly, France, Trainee Mechanic** **July 2017 - July 2017**
General Car Maintenance

- Earned work experience during high school, assisting a professional mechanic in a local garage for two weeks
- Learned to perform basic mechanic's tasks on customers' cars, such as removing wheels or draining oils

**E.P.A.F. (ENTRETIEN DU PATRIMOINE AUTOMOBILE FRANCAIS), Romorantin-Lanthenay, France, Job Shadowing** **February 2015 - February 2015**

Historical Racing Cars Maintenance and Replication

- Earned first work experience during middle school, among a team a 10 sportscars specialists
- Learned and followed the maintenance and reconstruction processes of historic Matra and Alpine sports cars for one week

## EXTRACURRICULAR ACTIVITIES, SKILLS & INTERESTS

**FORMULA FORD RESTORATION PROJECT (Cranfield University, volunteering)** **March 2025 - Today**
**Engine Rebuild**

- Projecting the restoration of a Van Diemen RF92 Formula Ford car, for the 25th anniversary of the Cranfield Motorsport formation, as part of a 18 people team

**TROYES RACING TEAM (UTT, volunteering then Student Project)** **September 2023 - June 2024**
**Formula Student Powertrain Designer**

- As part of a student project in UTT, dimensioned an electric powertrain for an upcoming Formula Student car
- Choice of motor, battery, control modules and transmission technologies; design of throttle and brake commands; autodidact learning about automotive-specific materials (motoring, differential gear train, Torque Vectoring systems...)
- As Powertrain Leader, launched the development of a Torque Vectoring, dual independent motors drivetrain, supervised the development of a cooling system test program, formed the next department leader to untaught yet engineering subjects and inter-department and supplier communication

**CLUB FABLAB MINDTECH (UTT, volunteering)** **September 2022 - June 2024**
**Workspace manager, then club vice-president**

- Supervised PCB engraving and additive manufacturing, at the service of Student Projects and alongside the University's French Robotic Cup team, Robotik UTT
- Workplace first-aider formation
- Organisation and participation to Open Days as ambassador, and to other UTT events as volunteer

### SKILLS

- **Languages: French** (Native language). **English** (Bilingual, TOEFL 111). **Spanish** (Advanced, B2), **Portuguese** (Read)
- **Computer-Assisted Design:** Advanced user of **PTC Creo, Siemens NX;** Basics of **CATIA**
- **Computer-Assisted Machining:** Advanced user of **Siemens NX, Vericut;** Basics of **Ultimaker Cura** (3D Manufacturing)
- **Computational Fluid Dynamics:** Basics of **Abaqus, Ansys Fluent**
- **Choice of Material:** Advanced user of **Ansys Granta EduPack**
- **Engine Simulation:** Advanced user of **AVL Cruise M** and **AVL Boost**
- **Microsoft Office Suite:** Excel, Word, PowerPoint, Project
- **Additional courses taken:** Aeronautics Initiation Certificate (high school, 2017); Formula Renault 2.0 driving (Euroformula, 2022); MOOC Project Management (MOOC GdP, 2024)

### INTERESTS

- **Hobbies:** Following F1, F2, F3, WEC, IMSA championships; Driving: casual orienteering rally pilot and co-pilot, advanced driving training on a Formula Renault 2.0 car; Vehicle maintenance, repairs and rebuilds on modern and historical vehicles; LEGO builder; 10m air pistol shooting (French Regional Cup level)
- **Other interests:** Motorsport, automotive, aeronautics, aerospace, and general science history; Music; Racing and trivia games

# ALEXANDRA N. GRAY

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alexandrag9301@gmail.com Citizenship: USA, Ireland

www.linkedin.com/in/alexandra-n-gray Bilingual: English, Spanish


Master's student in motorsport engineering, vehicle design and performance optimization. Competitive and determined, passionate about intersection of aerodynamics and vehicle dynamics. Well versed in working under pressure in professional motorsport environments. Background in research and development, vehicle safety engineering and failure analysis.

## WORK EXPERIENCE

**NASCAR Research and Development** (Concord, NC) **March 2023 - September 2024**

***Engineer, Safety Systems***

- Developed and implemented new rear head surround foam specification reducing peak head acceleration by up to 15G. Created finite element simulations using Catia 3DX, Altair Hypermesh, and LS-Dyna. Dynamic and quasi-static physical testing using drop tower and displacement controlled hydraulic ram. Sled testing of top performing prototypes using reconstructed crash pulse from vehicle IDR.
  - Findings presented at SAE WCX Conference in March 2025 and published by SAE in April 2025. *Development and Validation of a Rear Head Surround Foam Performance Specification for Stock Car Racing*.
- Lead engineer for driver cooling systems. Approved or redesigned team proposals using wireframe and surface geometry in Catia 3DX. Traveled to races to inspect systems being used to redirect airflow for aerodynamic advantages.
- Conducted full scale crash tests and analyzed data using MATLAB to develop new vehicle safety specifications for future stock cars including thresholds for intrusion, acceleration, and testing protocol.
- At-track or post-race failure analysis of crashed vehicles. Collected and analyzed GPS and IMU data for crash reconstruction. Imposed rule changes and redesigned components such as chassis or roof hatch based on findings.
- Instrumented drivers at track to monitor biometrics and provide recommendations for performance enhancement.
  - Paper under review for publishing in Medicine and Science in Sports and Exercise. *Heat stress on driver athletes in professional stock car racing*.

**Duke Injury Biomechanics Laboratory** (Durham, NC) **October 2020 - May 2023**

***Research Engineer***

- Studied behind armor blunt impact trauma to simulate impact of deformation from bullet. Testing using strain gauges, acoustic emission, and three axis accelerometers. Looked to apply new injury criteria to automotive accidents for shock absorbed by lung as opposed to displacement.
- Flexion/compression testing of full and segmented lumbar spine using dynamic MTS for injury prevention in autonomous vehicles. Assisted research of translating cadaver injury risk to ATD injury risk.
- Assessment of head injury criterion in material arts using custom developed earpiece accelerometer and video motion tracking. LS-Dyna modeling of time delay between accelerating mass and custom earpiece. Created Altium schematics and PCB files of custom earpiece.
- Paper published in ABME. *Biofidelity and Limitations of Instrumented Mouthguard Systems for Assessment of Rigid Body Head Kinematics.*

**Xilis, Inc.** (Durham, NC) **Summer 2022**

***Product Development Engineer Intern***

- Designed and fabricated development-stage medical devices using Solidworks, CNC milling, and SLA printing.
- Developed reflected image technique to determine variation in machined channel depth and calculate ideal flow rates.
- Developed image processing code in MATLAB to determine droplet size and count for batch robustness testing.

## EDUCATION AND PROJECTS

**Cranfield University** (Cranfield, England) **October 2024 - October 2025**

***MSc in Advanced Motorsport Engineering***

Aerodynamics, Composite Structures, CFD, Electronics/Data Acquisition, Powertrains, Structural Analysis, Vehicle Dynamics

- ***Course Representative - MSc Advanced Motorsport Engineering***
  Elected by peers as University liaison to set meeting agendas with the Board of Education. Representative at networking events with members of the motorsport industry. Organized presentations, workshops and corporate tours.
- **Quantifying the Effect of Strategic Deployment of Active Aerodynamics for Overtaking Potential in LeMans Racing**
  Thesis in progress. Quantifying overtaking potential in terms of velocity ratio as a function of gap and speed through CFD longitudinal separation study of LMP2 vehicle and canopy lap simulation. CFD study of drag reduction in open configuration. Assess potential aerodynamic balance shifts and effects on lap time and overtaking opportunities.
- ***Conceptual Design of Hydrogen ICE LMH Vehicle for 2028 - Lead for Aerodynamics and Aero Performance***
  Group design project currently in progress. Personally responsible for design and optimization of full aero package focusing on front splitter, underbody tunnels, diffuser and multi-element rear wing. RANS steady-state CFD simulations of individual components, quarter car, and full vehicle. Developed bicycle model lap simulation in Matlab including active aerodynamics and full drivetrain model in VBA for accounting for shift timing and coast down.
- ***DrivAer Moving Ground Wind Tunnel Testing***
  Determined an optimum ride height range to target a 40/60 aero balance with the highest possible downforce and L/D ratio. Data analyzed and configuration changes made on the spot with 20 minutes between runs. Wrote a processing script in MATLAB to quickly import excel data, calculate aerodynamic coefficients and create aero maps. Produced the highest performing setup with changes to diffuser angle, front splitter length, rear wing angle, and gurney flaps.
- ***Flow Interactions of Front Wing and Wheel Assemblies***
  Quarter car CFD analysis in ANSYS Fluent of modified 2017 Perrinn model based on the Williams FW40. Steady state, incompressible model using the k-omega SST model for turbulence. Constant velocity with moving ground and rotating wheel. Assessed impacts of ride height, tyre alignment, push or pull rod suspension configurations, varying degrees of anti-dive geometry, and multiple turning vanes for a variety of speeds. Conducted a grid convergence study, then conducted parametric studies and compared results for performance metrics such as lift-to-drag ratio.
- ***Formula 1 Brake Pedal Design***
  Optimized package volume supplied by team to create a weight efficient brake pedal meeting stiffness requirement. Presented on material selection, hand calculated stress flow and internal forces, implemented a numerical model for

topological optimization in Altair HyperMesh using Optistruct as a solver, and conducted static structural analysis to validate and further refine the design. Presented on fatigue life using Palmgren-Miner to calculate cumulative damage.

- ***Formula 1 Powertrain Design Sprint***
  One week redesign of AVL Boost model of current F1 powertrain for 2026 regulations. Modified intake geometry, runner length and diameter, and camshaft phasing for wave action tuning for consistent volumetric efficiency across engine speeds. Adjusted ignition timing and shortened combustion duration to improve fuel conversion efficiency. Tuned for lean fueling strategy with variable air fuel ratio between 1.2 and 1.65 while keeping octane requirement under 102. Model assumed use of a pre-chamber. Assessed tradeoffs of high compression in cylinder versus high boost pressures and decided on a lower compression ratio of 9.5 with variable turbocharger compressor ratios between 2.3 and 3.35. Achieved a 5.5% increase in peak torque and decreased minimum BSFC to 184 g/kWh.
- ***Virtual Grand Prix***
  Tuning dynamic behavior of ChassisSIM model of an unknown vehicle loosely based on a GT saloon car. Analysis of single lap MoTeC data from 3 practices and 1 qualifying session around Donnington Park. Adjustments of static camber, spring rates, antiroll bar rates, damper rates, and ballast position to achieve the minimum lap time. Race setup was the fastest in the class, 3.34 seconds lap time reduction from baseline.

**Duke University** (Durham, NC) **August 2019 - May 2023**

***Dual B.S.E in Mechanical Engineering and Materials Science, Biomedical Engineering***

Relevant Courses: Automotive Engineering Design, Computational Modeling in Crash Safety, Finite Element Method, Power for Mechanical Systems, Aircraft Performance, Vehicle Safety Engineering, Biomaterials and Biomechanics

- ***Vehicle Safety Engineering Final*** **August 2022 - May 2023**
  Designed a new 6 year old ATD neck in Solidworks modeled after the THOR and HYBRID-III. Developed LS-Dyna simulation of sled testing for tension, compression, and AP-Bending in frontal impact. Determined biofidelity specifications, kinetic and kinematic performance metrics and corridors, injury assessment reference values (IARVs).
- ***Teaching Assistant, Pratt Student Shop*** **January 2021 - May 2023**
  Guided student projects, coursework, and custom components for aerospace and automotive vehicles. Advised on design decisions for manufacturability. Conducted safety training for use of university machinery. Rebuilt CNC mill.
- ***Course Instructor: Introduction to Machining and Fabrication*** **August 2021 - December 2021**
  Instructed students on woodworking, waterjet, laser cutting, casting and molding, 3D printing, and CNC mill and lathe.

## EXTRACURRICULAR ACTIVITIES

**Duke University Motorsports, Formula SAE, Internal Combustion**

***President*** **February 2022 - May 2023**

- Set timeline and unified objectives to form concrete performance targets to design, build, test and compete a formula style, open wheeled race car. Completed the vehicle two months prior to previous seasons, allowing additional testing.
- Secured team sponsors, maintained and fostered alumni relations. Doubled sponsorship compared to previous seasons.
- Served as point of communication between team and University. Coordinated events between team and other universities. This was the first year the team was able to attend two scrimmages with universities prior to competition.

***Vehicle Dynamics Lead*** **May 2021 - May 2023**

- Rapid iteration and analysis of suspension pickup points based on handling characteristics and weight distribution.
- Developed vehicle testing standards for setup and conditions log sheets, instrumentation checks, and test plans.
- Instrumented control arms to evaluate simulated loads using custom code based on suspension pickup points.
- Facilitated visits with industry sponsors for 4-post and damper testing and conducted tuning workshops.
- Designed and manufactured Duke's first center lock wheel assemblies. Achieved 38% unsprung weight reduction.
- Evaluation of tyre performance using TTC Data in MATLAB and Optimum Tire.

***Chassis Design and Manufacturing Lead*** **May 2022 - May 2023**

- Created streamlined process for vehicle dynamics to send updated suspension points that would adjust a parametrically defined chassis model in Solidworks. Evaluated trade-offs of component positioning requirements for all subsystems.
- Implemented efficiency analysis of chassis tubing size and position for torsional stiffness by weight. FEA analysis of suspension and engine load cases to determine minimum necessary tube thickness. Decrease of 1 kg despite addition of rear box, taller main and front hoops, wider cockpit and powertrain cell.
- Passed SES documentation on first try by ensuring driver safety designing around driver position and rollover envelope.
- Designed and manufactured custom jig for minimizing error stack-up during in-house chassis welding. Suspension points were achieved within 1 mm of target position in any direction.

***Powertrain Team Member*** **August 2020 - May 2023**

- Designed an intake manifold using Solidworks CFD and GT-Power model for plenum volume and runner lengths.
- Fuel map designed in MoTeC M1 Tune to maximize power under wide open throttle and maximize fuel efficiency under partial and closed throttle. 100 octane for increased knock resistance and allowed spark timing advance.
- Shifted from naturally aspirated to turbocharged engine. Blow off valve introduced to reduce risk of compressor surge.
- Shifted from mechanical to electronic throttle control for clutch-less paddle shifting with servo electronic clutch.

**Duke Outing Club Trip Leader** **August 2019 - March 2020**

- Organized rafting, kayaking, mountain biking, climbing, and hiking. Completed CPR training and WFR training.

## SKILLS

**CAD Programmes:** Autodesk Fusion360, CATIA 3DX, Solidworks
**Simulation Tools:** Altair Hypermesh, ANSYS Fluent, ANSYS Spaceclaim, AVL Boost, Arduino, Simulink, LS-PrePost, LS-Dyna
**Data Processing and Analysis:** MATLAB, MoTeC i2 Pro and M1 Tune, Pi Toolbox, WinTAX, Microsoft Office
**Machining:** MasterCAM, CNC Machining (Mill, Lathe, Plasma Cutter), Sonic Wire EDM, TIG Welding

## INTERESTS AND ACHIEVEMENTS

**Professional Ballerina**

Developed competitive mindset and time management balancing premier level training with full time education. Pennsylvania Ballet, Oregon Ballet Theatre, San Francisco Ballet, Miami City Ballet, Ellison Ballet, Pacific Northwest Ballet, Houston Ballet.

**USA Representative - International Ballet Competition** **June 2018**

Invited as one of 100 dancers from around the world to compete in the Olympics of ballet as a USA representative

**President's Award, Florence Ruston Medallion, 1st Place Senior Women - Denver Ballet Guild** **March 2018**

Awarded to overall most promising dancer of competition in honors of competition founder, Florence Ruston

# DOMINIC J. HANNA

+1 (774) 245-9761 dominic.hanna.018@cranfield.ac.uk
Cranfield University

## PERSONAL STATEMENT

Data-driven engineer with intersecting passions for motorsport and performance engineering. Skilled in data collection and analysis, with professional experience in leadership of a amateur motorsport team, and ground-up development of an endurance racing platform from a stock consumer car. Further trackside experience as a data engineer in British F4 as a data engineer analysing reliability data and competitor run plans. Automotive industry expertise includes noise, vibration, and harshness (NVH) performance testing. Internships with industry-leading automotive manufacturers and junior motorsports teams display ability to tackle technical challenges in high-intensity environments, driving exemplary outcomes in both motorsports and the automotive sector.

## KEY ACHIEVEMENTS

- Converted a stock 2005 Mazda 3s for participation in the ChampCar Endurance Series 12-hour endurance race at Virginia International raceway in under six months and placed third in class
- Collaborated at Honda to devise new testing procedures for EVs, capturing how competitors were using active and passive technologies for noise enhancement and cancellation influencing the application of similar technologies in future Honda and Acura models
- Analysed historical pass-by noise tests at Peterbilt to create a prediction for which configurations were at highest risk of failure, reducing the number of configurations and frequency at which they had to be tested, reducing the number of tests required each new development

## EDUCATION

**MBA in Advanced Motorsport Engineering, Cranfield University, Cranfield, UK October 2024 - September 2025**

- Modules: Motorsport Powertrains, Motorsport Vehicle Dynamics, Motorsport Electronics and Data Acquisition, CFD for Motorsport, Motorsport Structural Analysis, Motorsport Aerodynamics, Composite Structures for Motorsport, Business of Motorsport
- Thesis: Stochastic Race Length Simulations for Strategy Enhancement in GTWCEu

**BS in Mechanical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, Virgina August 2020 - May 2024**

- Dual Major in Automotive Engineering & Mechanical Engineering
- 3.31 Overall GPA

## CAREER HISTORY

**Virtuosi Racing, Attleborough, England, British F4 Data Engineer March 2025 - October 2025**
Virtuosi is a highly successful junior single seater racing team with three decades of experience across various series. In 2024 Virtuosi won the F2 Championship as Invicta Racing and propelled Martin Molnar to a rookie championship in F4.

- Responsible for monitoring all reliability metrics and analysing competitor run plans to optimise qualifying strategy
- Work with the race engineers to analyse driver KPIs and coach drivers in post-session briefings

**Virginia Tech Grand Touring, Blacksburg, Virginia, Senior Design Captain August 2023 - May 2024**
Virginia Tech GT is a Senior Design team challenged with taking a production car and preparing it for competition. Each year the team enters a car in a 12-hour endurance race at Virginia International Raceway in the ChampCar Endurance Series.

- Developed software for an Arduino Mega data acquisition system to collect data on engine vitals and vehicle performance which allowed the team to validate performance requirements across multiple subprojects
- Led technical process from concept generation to production and validation of 13 subprojects in aerodynamics, engine performance, reliability, and driver safety which all met performance requirements on race day
- Served as strategist and race engineer, leading pit strategy, driver changes, and mechanical repairs. Worked with the pit crew to set tire pressures, plan fuel stops, and monitor brake temps and critical fluids

- Oversaw the completion in a 12-hour endurance race at Virginia International Raceway with the team finishing third in class

**Honda, Raymond, Ohio, NVH Test Engineering Co-Op** **May 2023 - August 2023**
Honda Development and Manufacturing of North America is responsible for all Honda platforms in the North American market.

- Researched the NVH packages and other components of fifteen competitor battery electric vehicles and reporting findings in presentations and a data sheet to support the development of NVH packages in upcoming Honda EVs
- Conducted Acoustic Vehicle Alert System, Active Noise Cancellation and Active Sound Control testing on a group of competitor EVs to support the development of similar systems in upcoming Honda EVs
- Refined vehicle performance models for Vi-Grade driving simulators and creating documentation on the refinement process
- Received training in Subjective Evaluation and Vehicle Dynamics Testing as well as certification as a test vehicle driver at North America's largest multi-user proving grounds

**Honda of Americas Racing Team, Raymond, Ohio, Volunteer** **May 2023 - August 2023**
HART is an after hour volunteer team of Honda Associates racing Honda's products at all levels of American Motorsport.

- Converted a 2023 Integra for various ClubSport series with powertrain swaps, suspension installs, and interior teardowns
- Assisted IMSA Touring Car Championship Team with race weekend preparations

**Virginia Tech EngE, Blacksburg, Virginia, Undergraduate Researcher** **August 2021 - May 2023**
Engineering Education is the leading department at Virginia Tech for interdisciplinary research in engineering.

- Collaborated with a professor to start a new research project investigating Interpretation of Non-Verbal Communication in Automotive Contexts
- Identified issues with the current systems for driver-to-driver, driver-to-pedestrian, driver-to-vehicle, vehicle-to-vehicle, and vehicle-to-infrastructure communication
- Developed a prototype non-verbal communication system for drivers based on the principles of the original horn system
- Planned and executed a study with human subjects to understand how accurately people can use non-verbal tones to communicate messages in driving situations

**Peterbilt, Denton, Texas, Engineering Program Testing Support Intern** **May 2022 - August 2022**
Peterbilt manufactures industry-leading diesel and electric trucks with applications in long-haul, local delivery and vocational use.

- Conducted Pass-by Noise and Interior Noise Testing to validate programs and certify vehicle configurations under 40 CFR 205 and 49 CFR 393.94
- Conducted performance analysis on historical noise data to rank vehicle configurations by failure risk
- Summarized findings of the historical analysis in technical reports to guide future test plans and aid in the creation of a new corporate standard for Pass-by Noise and Interior Noise Testing

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

**Softwares**
Motec, Pi Toolbox, McLaren ATLAS, Simulink, Discrete Event Simulation, Solidworks, Ansys, Linux based High Power Computing, Vi-Grade Performance Data Prep and NVH Simulator, Siemens TestLab,Code Composer Studio, dSpace
**Mechanical and Technical**
Vehicle instrumentation, Sub-limit vehicle testing, subjective vehicle evaluation, data collection, metal fabrication, motor building
**Coding Languages**
MATLAB, Python, C, Arduino
**Extracurricular Activities**
Virginia Tech Homecoming Court - Campaigned against nine peers on philanthropic campaigns for a $1000 grant to bring resources to support our philanthropy to campus, won and used funding to create an ongoing men's mental health resource fair - Blacksburg, VA (March 2023 - October 2023)
VPI Chapter of Triangle Fraternity - Initiated as a brother in Fall of 2021 and served a term as New Member Educator, modernizing the curriculum to better fit a growing fraternity and the evolving landscape surrounding fraternity life - Blacksburg, VA (August 2021 - May 2024)

# Cian Healy

Baroness Young Hall Block 5, The Drive, Wharley End, Bedford, United Kingdom, MK43 0SR
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**Profile**

Commencing October 2024 I started **Cranfield University's MSc in Advanced Motorsport Engineering.** Cranfield's close relationship with the motorsport industry and its state-of-the-art facilities and lecturers will give me a great foundation to make my start in motorsports while combining my already well-rounded skillset from the highly technical data centre world.
I possess a **BSc in Mechanical Engineering specialising in fluid dynamics**. I have a high level of experience in internal flow, aerodynamic and thermal CFD Analysis as well as a range of thermodynamic settings and heat transfer mechanisms. I have a passion for design and simulation work as well as real world validation and testing while learning new skills.
My key strengths lie in my engineering capabilities, analytical problem-solving skills, teamwork capabilities and leadership as well as my fundamental understanding of fluid dynamics.

**Work Experiences**

**September 2023 – September 2024 Graduate Mechanical Engineer Mercury Engineering**

- Worked as a mechanical engineer on a 32MW data centre worth approximately €260,000,000 in Raunheim Germany.
- Had full responsibility for the **design, implementation, design co-ordination and design review** of the centre wide ventilation system. Personally managed packages worth approximately **€11,000,000** including a custom smoke and heat extract system for internally placed transformers and generator.
- Had design implementation responsibility and review of **all CFD simulations for critical rooms and services.**
- Assisted in the **critical cooling package** for the whole data centre as well as a prepackaged plant room, the data centre plumbing system and working with specialist for the custom design of the main equipment CRAH units and DOAS.
- Entailed close work with electrical and structural engineering departments.
- Coordinated all work with the control engineers to achieve desired implementation of control and sensor protocols on the building management system (BMS)**.**
- **Led a team peaking at 40** for implementation of assigned packages.
- Had full charge of equipment selection and design within building generator rooms to achieve precise pressure drops which involved multiple CFD runs and pressure calculations to ensure optimal performance of genset radiator design.

**RELEVANT PROJECTS:**

***Bachelor's Projects:***

**Bachelor's Thesis:** Conducted a thesis of a CFD Analysis of a gurney flap for race car applications. Aim: this project aims to investigate the aerodynamic effect of a gurney flap on an aerofoil specifically for motorsport purposes. Significant increases to lift were found with only minor drag penalties up until a 3% gurney flap height with the most effective height of flap being 1% of the aerofoil chord length.
**Mechanical design project**: Design of a full wheel upright and braking system for a formula student vehicle as well as performing FEA on the entire assembly to ensure adequate lifespan and performance of part in predicted use cycles.

***MSc Project work:***

**Group Design Project:** As part of the completion of my MSc, I am currently undertaking a group project entailing the full conceptual design of a Hydrogen ICE hypercar intended to compete in the 2028 Le Mans 24hr race. This has seen me involved with initial powertrain design, cooling performance and aero performance targets. Current role is leading the design of the vehicles overall aero package. Through the use of CFD, this has seen extensive quarter car simulations to achieve desirable front downforce as well as dictating the flow of air over the length of the vehicle, a comprehensive rear wing and endplate study as well as multiple iterations of underbody aerodynamics and diffuser design. This is all being performed in conjunction with the aero performance group on the project to achieve desirable aerodynamic efficiency targets as well as optimal downforce distribution for the vehicle dynamics team.
**Powertrains project**: Simulated optimisation of a 2026 Formula One Power Unit using AVL Boost to tune desirable levels of power output engine while tuning a predictable volumetric efficiency and keeping within the required levels of octane, boost pressure and predicted lambda values as per the 2026 F1 regulations.
**Wind Tunnel project:** Wind Tunnel tested and subsequently optimised a high downforce configuration DrivAer model. Max downforce was achieved while retaining a 40:60 front-to-rear aero balance.
**Vehicle Dynamics Project**: Suspension and chassis setup and optimisation were performed for a virtual race around Donnington Park using ChassisSim for the Virtual Grand Prix competition and MoTec I2 for lap analysis between sessions. Alterations to the setup by myself and my team had us place with the second fastest lap time in the competition.

**CFD project:** CFD analysis of a quarter car 2017 F1 Perrinn model. This entailed a full mesh convergence study as well as geometry cleanup. The parameters investigated included vehicle velocities, investigations into the effect of vehicle ride height, varying front wing designs, different push and pull rod setups as well as multiple different toe and camber angles. This was done to determine the optimal front vehicle setup for aerodynamic performance.

**Motorsport electronics project**: Setup of a Vauxhall VX220 full suite of sensor including full calibration for onset track testing. These included ride height and damper sensors, steering angle sensor, throttle position sensors. This data was subsequently analysed using Pi Toolbox.

**Mechanical structure project:** A full design optimisation of an F1 brake pedal. This entailed a full material selection, load path calculation and fatigue analysis of the entire pedal assembly. The maximum, stresses, strains and deflection were performed using Hypermesh and Optistruct to perform a FEA prior to which a topological optimisation was undertaken to reduce the mass & costs.

**Education:**

| | |
|---|---|
| **October 2024 – September 2025:** | Accepted as a full-time student at Cranfield University's MSc in Advanced Motorsport Engineering<br>**Course modules:** Motorsport Structural Analysis, Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Motorsport Aerodynamics, Computational Fluid Dynamics for Motorsport, The Business of Motorsport, Composite Structures for Motorsport, Motorsport Powertrains, Group Design Project, Individual Research Thesis. |
| **September 2019 - May 2023:** | B.Sc. Mechanical Engineering in the Technological University Dublin where I graduated with an upper 2nd Class Honours. Spent a semester studying abroad at The University of Luzern Applied Sciences and Arts.<br>**Relevant subjects:** Engineering Mathematics, Fluid Dynamics, Applied Thermodynamics, Electrical & Electronic Engineering, Mechanics, Design Engineering, Materials Engineering, Computer Engineering, Control Engineering, Energy Systems Engineering, Heat Transfer, Mechanics of Machines.<br>**Other Subjects:** Engineering Management, Professional Development, Medical Devices Engineering, and a multitude of different design projects.<br>Laboratories performed in the field of Fluid Mechanics, Electrical Engineering, control engineering as well as applied thermodynamics and energy systems with sessions in virtual FEA. Investigations additionally conducted into the Mechanics of Machines and Materials. |

**Skills, Interests & Extracurricular Activities**

- Extensive **Ansys Fluent** experience with **aerodynamic CFD modelling** and **simulation** for full cars, quarter car models &2D wing profiles.
- **Wind tunnel testing** of high downforce configuration vehicles in open and closed section wind tunnels.
- Experience in **CFD review for thermal analysis** in a design setting.
- Competency with **Solidworks** and embedded **FEA** functions. Minor **Catia Surfacing** experience.
- High competency in working with **technical schematics** and plans in relation to 3D models.
- Heavily experienced in internal flow design, theory and evaluation.
- Proficient in the use of **AVL Boost** for ICE modelling and modification.
- Experience with **MATLAB**.
- Experience in **Pi Toolbox & MoTeC I2** for track data analysis.
- Basic experience in vehicle sensor and suspension setup for performance testing and modification of damper, tire, wheel cambers and antiroll bar setup.
- Proficient in the use of **MS office programs** such as **Word**, **Excel**, **PowerPoint**, and **Project**.
- Communication, as having worked on complex research projects ranging from teams of 3 people in Medical Engineering to part of a 30+ team as a data centre mechanical engineer.
- Capable of conversational level of **French** due to 6 years of study as well as having completed A1 intro to **German** while living in Switzerland further developed in my time working in Germany.
- Avid fan of all forms of motorsport most notably Formula 1 as well as keen automotive enthusiast.

**References:**

| | |
|---|---|
| Prof. Fergal Boyle: | Head of Mechanical & Design Engineering, Technological University Dublin, Bolton Street Dublin 1.<br>Email: fergal.boyle@TUDublin.ie |
| Daniel Cohim | Mechanical Project Manager, Mercury Engineering, FRA31 56 Frankfurter Strasse, Germany<br>Email: daniel.cohim@mercuryeng.com |

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Swiss

## Languages

**German**
German native

**English**
English C1 (IELTS)

**French**
French B2

## Computer skills

**Matlab/Simulink**

**C/C++**

**Speedgoat**

**MS Office**

## Recent projects

**BBW HIL**
Developed a Brake-by-Wire HIL system and implemented a brake blending controller.

## Interests

**Hobby**
Skateboarding
Skiing
e-Sports

# Steve IMBODEN

Control Systems Engineer

## Summary

Graduate engineer with professional motorsport experience in motor control, system dynamics, and HIL testing. Interested in control algorithms, modeling, simulations, embedded systems and real-time data analysis.

## Work experience

12/2023 - 07/2024 — Porsche AG, Weissach GER

**Bachelor Thesis**
Designed a controller methodology for the electrical drive of the Tag Heuer Porsche Formula E Team, incorporating a digital twin of the electrical machine in Simulink and validating it on a test rig

08/2023 - 12/2023 — Speedgoat GmbH, Bern CH

**Summer Internship, part-time job (20%)**
Implemented rapid control prototyping projects with a focus on real-time control for electrical drives. Collaborated in curriculum development related to rapid control prototyping, creating educational materials and exercises for practical implementation

01/2023 - 07/2023 — Porsche AG, Weissach GER

**Internship**
Implemented software projects for the Porsche Tag Heuer Formula E Team, focusing on developing and optimizing automation applications. Assisted in maintaining Hardware-in-the-Loop (HIL) systems for real-time testing and validation of vehicle software

06/2022 — Imsol Elektrotechnik GmbH, Zurich CH

**Co-Founder**
Specializing in efficient solar energy solutions. Designing innovative electrical device concepts through simulation and testing using simulation software

## Education

09/2024 — Cranfield University, Cranfield, UK

**MSc**
Master in Advanced Motorsport Mechatronics

09/2020 - 07/2024 — Zurich University of Applied Sciences, Zurich, CH

**BSc**
Bachelor in Systems Engineering with Specialisation in Robotics and Mechatronics

# THOMAS KNILL

+44 7885389541 · Tomknill20@Outlook.com
Cranfield, Bedfordshire · Full UK Driving license

## PERSONAL STATEMENT

A practical young professional currently studying for an MSc in Advanced Motorsport Engineering, with research experience in motorsport aerodynamics and with work experience in data/race engineering. Professional experience is focused on the areas of project management and engineering design. Passionate about anything related to motorsport. Team-driven, creative, progressive and eager to take on challenging projects. Possesses the ability to manage people, resources and build solid connections and lasting relationships between clients and stakeholders.

## KEY ACHIEVEMENTS

- Achieved a first-class degree in undergraduate Mechanical Engineering (University of Portsmouth, 2021)
- Successfully managed multiple, large-scale projects across a wide range of countries, each valuing up to £1m (SeaTec, 2021-24)
- Worked closely with Civil Engineers to correctly position the ground support and structural base for the Battersea flat conversion project (Balfour Beatty, 2017-18)
- Provided race and data engineering support for a GT race team. Mainly focusing on both the Porsche GT4 Cayman and 991.2 Cup car. Contributing to post session data analysis/race reports, strategy development and vehicle optimisation, resulting in an overall victories for the team. (Toro Verde GT, 2025 – Present)

## EDUCATION

**MSc Advanced Motorsport Engineering, Cranfield University** **October 2024 - September 2025**

- **Modules:** Motorsport Powertrains, Motorsport Electronics & Data Acquisition, Motorsport Vehicle Dynamics, Business of Motorsport, Motorsport Aerodynamics, Motorsport Structural Analysis, Computational Fluid Dynamics and Composites Structures for Motorsport, including a Group Project and Independent Thesis Project
- **Group project: '**Hydrogen powered LMH (Le Mans Hypercar)'. Leading a team of 12 students to design an LMH prototype race car, with a focus on a hydrogen ICE to develop zero emission combustion whilst also producing a competitive car to compete within World Endurance Championship
- **Individual thesis:** Topic TBD.

**BEng Mechanical Engineering, University of Portsmouth** **September 2018 - July 2021**

- **First year modules:** Mathematical Principles, Electrical and Electronic Principles, Communication and Engineering Technology Appreciation, Mechanical Engineering Principles, Introduction to Design, Introduction to Solid Mechanics and Dynamics
- **Second year modules:** Control Engineering, Thermodynamics and Fluid Mechanics, Engineering Mathematics and Numerical Analysis, Computer Aided Engineering and Product Manufacture, Engineering Design, Solid Mechanics and Dynamics
- **Third year modules:** Finite Element Analysis in Solid Mechanics, Design for Quality, Sustainable Development and Environmental Management, Advanced Thermodynamics and Fluid Mechanics
- **Bachelor thesis:** The design and aerodynamic analysis of a front wing on an open wheel formula race car. Detail analysis of the flow around a multi-element wing in ground effect and how changes such as angle of attack and ground proximity can affect the airflow using CFD. Created the model with Creo Parametric. Analysed 2D and 3D flow fields with a discussion on how this design would be improved

**Level 3 BTEC Extended Diploma Motorsport Mechanics, Basingstoke College of Technology** **September 2015 - July 2017**

- **Modules:** Engineering Design, Braking Systems, Chassis Systems, Engine Systems, Fuel and Injection Systems, Ignition Systems, Gearbox and Drivetrain, Motorsport Operations

## CAREER HISTORY

**SeaTec Subsea, Southampton, Project Engineer/Manager** **December 2021 - September 2024**

- Performed the majority of the mechanical design for SeaTec, including detail drawings, FEA and 3D modelling. Taking raw data points and inputting into CAD software to obtain measurements. Incorporating project requirements and ensuring designs aligned with client needs.
- Planned and managed onsite activities for a variety of large-scale projects. Provided leadership to teams up to 10 people throughout the lifecycle of the project with keeping consistent communication with the client to manage expectations. This led to projects being delivered within established timelines whilst remaining within budget constraints.
- Developed and managed both the technical and financial performance of projects to ensure that they were completed within the budget and time schedule. Using Excel, Microsoft Project and simple time, cost and quality exercises to establish Key Performance Indicators and to monitor the overall progress, improving the delivery of projects as well as boosting client confidence with consistent updates during manufacture or installation
- Helped develop a comprehensive quality assurance process to not only demonstrate safety compliance but also that the product was built in accordance to specification. This led to 100% conformity with any product post manufacture which eliminated any safety related incidents with the product in use
- Prepared and implemented procedures on site to ensure the project was completed safely and within the customers' specifications. Completed daily meetings with both the client and on-site team ensuring they were informed of the current day's objectives and overall progress of the project. Using the procedure to effectively manage progress

**Balfour Beatty Ground Engineering, Basingstoke, Trainee Cad Technician** **September 2017 - July 2018**

- Produced most of the drawings for the Battersea Power Station project plus other projects as required, making sure to adhere to strict deadlines to keep construction on track
- Worked as part of a project team with other disciplines such as Engineering, Quantity Surveyors and Project Management to achieve project objectives. Utilisng effective communication and teamworking skills to aid meetings and discussions
- Produced detailed drawings to Engineers specifications using AutoCAD to assist with varying scaled projects
- Worked to time deadlines to ensure project timescales were achieved
- Worked to time a project timelines to make sure that they were met. Prioritising and managing multiple tasks within their respective deadlines to ensure each target was achieved according to the initial scope

## ADDITIONAL ACADEMIC PROJECTS

- Ran and analysed scale wind tunnel tests on a DrivAer model, testing front splitter lengths, rear wing angle/gurney flap size and diffuser angles to create an aerodynamic map of the model to extract maximum efficiency values (Cranfield, 2025)
- Designed a simplified front wing assembly for a modern Formula 1 car based off the Perrinn 2017 model. Using the base model to compare the aerodynamic performance of each wing for two different ride heights. Analysed using 2D and 3D flow fields to visualise the wake pattern and compare each wing (Cranfield, 2025)
- Designed, ran and analysed scale wind tunnel tests on a symmetric aerofoil to determine stall angle by analysing angle of attack (University of Portsmouth, 2021)
- Designed a gearbox and produced detailed drawings as part of a team (University of Portsmouth, 2019)
- Ran laboratory experiments on laminar and turbulent flow (University of Portsmouth, 2019)
- Mechanical theory and practical experience of creating a race car. (Basingstoke College of Technology, 2017)
- As part of a team, built a race car to race in a single marque race series and raced at various tracks within the UK (Basingstoke College of Technology, 2017)

## SKILLS, INTERESTS & EXTRACURICUALR ACTIVITIES

- **Languages:** Native English, learning Italian and German (basic)
- **IT Skills:** Siemens NX (basic), Creo Parametric, ANSYS Fluent, Star CCM+, AutoCAD, AVL Boost, Ansys, MATLAB, Autodesk Inventor, Microsoft package
- **Individual Interests:** Competed in Karting/Car racing at both club and national level from the age of 8. Enjoys video games/sim racing, listening to music, reading and working on an engine swap project for a Mercedes-Benz 190e
- **Professional Training:** Completed APM (Project Management Fundamentals), IOSH Managing Safely, HCS Site Supervisors Safety Training Scheme and First Aid at Work
- **Extracurricular activities:** Volunteering as a Race Engineer. Contributing to race strategy, vehicle setup and data analysis, improving lap times and race finish position (Nomad Sim Racing, 2025 – Present)

# BLAKE LAWRENCE KUHLMANN

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www.linkedin.com/in/blake-kuhlmann-eng

Location: Bedford - MK43

Full UK Driving Licence with Car

## Profile

A motivated and passionate engineer driven to deliver a high-quality output which coincides with realistic deadlines, results and target driven.
Ultra-competitive with a detail-oriented outlook, outstanding work ethic, while having fun at all times.
Skilled in an array of engineering design and CFD software and eager to adapt to new environments, technologies and challenges within a professional career.

## Personal Achievements

- Motorsport UK Registered Marshal
- Completed NTU's Engineering Research Opportunity Scholarship
- First Team Dodgeball member at NTU – Won the BUCS League in 22/23 in an Invincibles season
- Organised and hosted a charity event for BBC's Children in Need Day 2024 raising over £600 In 24 hours, with plans to host more events throughout the academic year

## Engineering Experience

CTS Motorsport – Race Mechanic Weekend Experience
Summer 2024

Race Mechanic working with Caterham Sevens competing in the Caterham Graduates Racing Club for CTS Motorsport.
This involved logistics, preparing and loading the cars and equipment for travel, setting up at the track, preparing cars for sessions, communicating with drivers during and outside of sessions, and repairs/maintenance.
Gained vital knowledge into how a race weekend is executed and other factors such as working to strict deadlines and communication skills between mechanics, engineers and drivers.

NTU Racing Formula Student Team – Lead Suspension Engineer, Head of Team Health and Safety & Captain of FS Sim Racing Team
September 2021 – September 2024

Team Member from September 2021 - 2023

2023 Onwards:
Led a small team to design and manufacture the suspension for the first Generation NTU formula student car.
Engaged in researching and securing commercial partners for the team and building the teams yearly budget and financials.

Managed the Health and Safety for the team, including all risk assessments, fabrication inductions, and student safety in manufacture. This helped develop relationships within the universities engineering technical team and improved communication skills relaying relevant and concise information.

Captained and competed in the Formula Student Sim Racing Series. This was intended as a fun racing league but also honed skills in vehicle set-up across different racing cars for varying tracks and weather conditions. This also involved using data acquisition systems such as MoTeC to enhance the performance of the team throughout the season. Attended the Finale at the Williams Esports Lounge at the Grove Factory, finishing 28$^{th}$ /53 on the season.

NTU EROS Project (Engineering Research Opportunity Scholarship)
June 2023 – July 2023

This scholarship research project included pioneering the first rig to allow for testing of the lateral grip of bicycle tyres, measuring when the cornering force exceeds the frictional force and slipping occurs. This project is also being leveraged as a basis for future development in its field by students and academics at the university.

## Skills

Engineering Software

- Fusion360 (3 Years)
- Catia (2 Years)
- SolidWorks (4 Years)
- ANSYS (CFD, Fluent, Granta) (3 Years)
- MATLAB (6 Years)
- C/C++ (3 Years)
- SusProg3D (1 Year)
- Microsoft Office (10 Years)
- SPSS (1 Year)
- AVL Boost (1 year)
- MoTec i2 Pro

Soft Skills

- Presentation Skills
- Teamworking and Management
- Initiative and Flexibility
- Multitasking
- Professionalism and Maturity

Engineering Manufacturing

- Welding
- Traditional Machining
- CNC Machining
- Hand and Power Tools
- Finishing

## Personal Interests/Hobbies

- Sim racing
- DIY
- Sports (Rugby, Pool, Dodgeball + many more)
- Aerodynamics
- Lego
- Cooking

## Future Objectives

- Further develop skills in trackside engineering, Data analysis and Vehicle Dynamics.
- Become proficient in Siemens NX, and further design skills in time outside of studies making use of the Uni's licenses in each.
- Become a Chartered Engineer.
- Work towards senior role within F1.
- Give back to the community of young engineers looking to make a mark in the motorsport world.

# Education

Cranfield University 2024 – Current (Predicted September 2025)

MSc Advanced Motorsport Engineering

Nottingham Trent University 2021- 2024

BEng Mechanical Engineering - First Class with Honours

Final Year Project: Analysing the impact spray guards have on the performance of an F1 car in the wet.
This project started the basis of research into enhancing safety and the ability to race in wetter weather than currently available in F1 by reducing visibility-impairing spray.
Other Modules/Project included:
Data Analysis for Sports Performance – Analysing tennis racquet data utilising the SPSS statistics software.
Helmet Design Portfolio – Designed an F1 Helmet with aims to improve its overall solid mechanics, fluid dynamics, and thermal performance.

University of Nottingham 2019-2021

Undergraduate Certificate in Aerospace Engineering

Strode's College 2017-2019

A Levels - A, A, A – Mathematics, Physics, Design Technology

# Employment History

J and B Commerce - Co Founder and Director April 2022 – Current

Ran a small E-Commerce business, trading mostly on eBay, repairing and selling electronic goods globally to consumers and businesses. This combined an interest in electronics and electronic repairs with running a business to improve personal skills and understanding in how to run a successful business, opening a different perspective in how companies and motorsport teams operate.

This role involved all avenues of business including but not limited to: purchasing, inventory management, sales, customer service, packing and shipping, finances, and accounts.

Sainsbury's – Multiple Roles August 2021 – September 2024

Nottingham Waverley St – Trading Assistant

Coventry Canley – Home Delivery Driver

McDonald's - Crew Member October 2017 to June 2019

Ashford, Surrey

# TRISTAN LACOMBE

+44 7487 670494 tristan.lacombe@cranfield.ac.uk
Cranfield University, UK

## PERSONAL STATEMENT

A creative and forward-thinking student in Motorsport Engineering at Cranfield University with knowledge developed through books, webinars, driving and volunteer jobs. Determined to be among the best in high performance engineering, driven by a genuine interest in motorsport and automotive. Engineering experience acquired through the management of a Formula Student team, three years of apprenticeship in the automotive industry and involvement in volunteer jobs. Demonstrates communication, analytical, and organisational skills, strengthened by academic and international work experience in the automotive industry.

## KEY ACHIEVEMENTS

- Acted as the Formula Student Head of the Performance and Manufacturing department which led to winning the FS France 2024 Best Rookie Team.
- Achieved the engineering degree best academic record out of all students in the masters cohort, INSA Lyon, 2021-2024.
- Awarded the 2024 ‘French University Football Champion’ title.

## EDUCATION

**MSc in Advanced Motorsport Engineering, Cranfield University, Cranfield, UK (October 2024 - September 2025)**

- **Modules**: Motorsport Vehicle Dynamics, Motorsport Electronics and Data Acquisition, Motorsport Aerodynamics, Composite Structures for Motorsport, Motorsport Powertrains, Structural Analysis.
- **Projects**:
  - Structural Analysis - Formula One Brake Pedal optimisation and structural analysis on HyperMesh Optistruct.
  - Composite Structures - Fabrication of a carbon fiber wing and deformation prediction by hand calculation and FEA.
  - Vehicle Dynamics - Virtual Race Simulation, Data Performance Engineering on Motec i2.
  - Powertrains - F1 2026 Technical regulation simulations with AVL Boost.
  - Aerodynamics - Optimisation of a car performance in wind tunnel.
  - CFD - Flow Interactions of Front Wing and Wheel Assemblies.
- **Group Design Project**: Conceptual design of a Hydrogen ICE car for “LMH” in 2028.
  Surfacic design of the survival cell and torsional stiffness optimisation. FEA calculations on structural parts.
- Crandfield University futsal Team - Midlands vice-champion.

**MEng in Mechanical Engineering, Advanced Polymer Specialty : INSA Lyon, France (September 2021 - August 2024)**

- **Modules**: Dynamics of mechanical systems, Design and computer design, Engineering materials, Composites, Fluid Mechanics, Mechanical analysis for polymer and composite structures.
- First Class Honours.
- **Thesis**: Design of a composite FSAE chassis.
  Study of the possibility of using a composite tubular chassis. Material characterization, chassis design and FEA calculations.
- **Activities**: Manager of a Formula Student Team.
  Player for the INSA Lyon first football team: French school champion.
  Apprentice at AKWEL Automotive.

**BEng in Physical Measurements : Montpellier, France (September 2019 - July 2021)**

- **Modules**: Electronic, Metrology, Algorithmic, Thermodynamics, Mechanics, Mathematics, Programming, Fluid mechanics, Wave optics, Materials, Statistics.
- First Class Honours.
- **Thesis**: Implementation of a material to achieve superhydrophobicity by structuring the surface using laser writing.
- **Activity**: French University Football Championship with the Montpellier University Team.

## FORMULA STUDENT EXPERIENCE

**Insa Racing Team, Lyon, France, Manager (June 2021 - August 2024).**
Formula Student Team.

- Designed, validated and machined parts such as ball joints and uprigths and managed six people to follow a parts manufacturing schedule.
- Optimised vehicle parameters before manufacturing. Conducted vehicle modeling on Matlab and CarMaker and simulation in steady state cornering (skidpad). Supervised a project to develop a deep learning programme to optimise the trajectories of the vehicle on the track on Simulink
- Designed and hand-crafted a carbon fibre bucket seat.

## CAREER HISTORY

**Akwel Automotive, Champfromier, France, Design Engineer Apprentice (September 2021 - August 2024).**
Automotive components manufacturer in fluid management and mechanisms.

- Designed engineered CAD design of parts, correction of plan if defective parts.
- Collaborated with six people on an innovative project for regulating temperature of electric car batteries using plastic heat pipes. Responsible for the models and tests carried out to validate the concept.
- Carried out assignments in the United Kingdom working one month on thermal insulation solutions for coolant hoses and in Spain addressing the carbon footprints of components.

**Didier Andre Driver Development, Valence, France, Kart Mechanic and Data Analyst (May 2023 - September 2023).**
Driving school.

- Repaired go-karts during mechanical issues, ensuring optimal performance for one participants per event.
- Adjusted engine settings, tyre pressure, and other parameters based on track conditions, enhanced vehicle handling and stability. Discussed with the driver in order to get their feelings regarding the karting settings.
- Looked at the datas to see how the driver could improve.

## ACADEMIC PROJECTS

- Search for structural causes of Titan failure. Explicit, Implicit and Buckling Analysis of the Titan submersible on Abaqus CAE to determine potential causes of failure.
- Optimization of the thickness of a composite hydrogen tank on Abaqus CAE.
- Calculation of the mechanical resistance of the connection between the side of a car seat back and the system which allows it to tilt.
- Modeling a car on Simulink and analyzing its behavior (roll, pitch, forces) according to the suspensions and the road for a vehicle dynamics project.

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

- **Languages**: French (native), English (IELTS 7/9 and certification C1 Kaplan International), Spanish (B1).
- **IT Skills**: Confident IT user. Experienced with MS Office, VBA, MATLAB/Simulink, Python, CATIA (V5 and V6), Solidworks, LaTeX, Abaqus, Hypermesh Optistruct, ANSYS, AVL Boost and CarMaker. Knowledge PI Toolbox and C++ programming language.
- **Individual interests**:
  → Motorsport enthusiast (Moto GP, GT cars, Formula One, World Endurance Championship).
  → Sport (football, tennis, karting, weight training, jogging).
- **Football**: 13 years of football at regional level, including 2 years in a sport-study program and 4 years in a university team.
- **Travel**: England, Ireland, United States, Egypt, Russia, Spain, Norway, Greece, Italy.
- **Reading** of technical motorsport and automotive books:
  → *Fundamentals of Vehicle Dynamics* by Thomas D. Gillespie (1992).
  → *Race Car Design* by Derek Seward (2014).
  → *Racecar Engineering*, reader since September 2021.
  → *Motorcycle Dynamics*, by Vittore Cossalter (2002).
- **Licences - Driving**: A2, B and Boat driving licences.

# MARC LAHOZ FERNÁNDEZ

## MOTORSPORT AND AEROSPACE ENGINEER

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Baroness Young Hall Block 1, Cranfield, MK43 0AL

## PERSONAL STATEMENT

An engineer with a strong foundation in aerodynamics, CFD, and motorsport engineering, focused on driving innovation and delivering practical solutions to complex challenges. Possesses extensive hands-on experience in both academic and professional settings, leading to the creation, simulation, and optimisation of diverse systems. Work at MotoSpirit, MGI and Riera Nadeu sharpened skills in CFD and CAD modelling, while experience at Vueling provided operational and management insights. Thrives in collaborative environments, blending creativity, technical expertise and attention to detail to push technological boundaries and achieve high-impact results. This merges into a deep enthusiasm for motorsport, especially Formula 1, where precision, speed, and performance meet cutting-edge technology.

## KEY ACHIEVEMENTS

- Honoured with the “Hall of Terrassa Award” for the Aerospace Engineering Final Degree Thesis on enhancing wind turbine efficiency through Active Flow Control, receiving a grade of 10/10 and funding for project development.
- Published a scientific paper in Aerospace Engineering on Active Flow Control using Synthetic Jets, demonstrating a 264% increase in aerodynamic efficiency and a 65% lift improvement with applications in renewable energy (URL).
- Engineered cooling solutions for the battery pack of an electric motorcycle, optimising thermal management and fluid flow pathways, and created an air duct system for improved performance in the MotoStudent competition.
- Pursuing a dual master’s degree in Advanced Motorsport Engineering at Cranfield University (UK) and Aeronautical Engineering at Universitat Politècnica de Catalunya (Spain), with a first-year academic performance of 9.0/10.

## EDUCATION

### Double MSc in Advanced Motorsport Engineering | Cranfield University, Cranfield, UK

Oct 2024 - Aug 2025

**Modules:** Induction and Introduction to Motorsport, Motorsport Structural Analysis, Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Motorsport Aerodynamics, Computational Fluid Dynamics for Motorsport, The Business of Motorsport, Composite Structures for Motorsport and Motorsport Powertrains.
**Group Project:** Led the aerodynamic development of a hydrogen-powered Le Mans Hypercar, designing the bodywork and performing CFD simulations and aerodynamic analysis. Optimised downforce, drag, and airflow characteristics to enhance vehicle performance, efficiency, and stability, applying advanced aerodynamic principles.
**Membership:** Formula Ford Restoration Project. As part of the 25th anniversary of the Advanced Motorsport Engineering MSc at Cranfield University, collaborated in the full restoration of a 1998 Formula Ford.

### Double MSc in Aeronautical and Aerospace Engineering | Universitat Politècnica de Catalunya (UPC), ESEIAAT, Terrassa, Spain

Sept 2023 - Aug 2025

**Modules:** Aerodynamics, Flight and Orbital Mechanics, Aerospace Materials, Radiofrequency and Communication Systems, Design and Construction of Airports, Aerospace Vehicles and Leadership of Aircraft and Aerospace Projects.

### BSc Aerospace Technology Engineering | Universitat Politècnica de Catalunya (UPC) ESEIAAT, Terrassa, Spain

Sept 2019 - Jul 2023

**Modules:** Thermodynamics, Aircraft Design, Computer Programming, Material Science, Propulsive Systems, Fluid Mechanics and CFD, Aerodynamics, Aerospace Structures, Flight Mechanics, Avionics and Space Engineering.
**Final Degree Thesis:** ‘Wind turbine enhancement via Active Flow Control’. Using CFD simulations in OpenFOAM, the project improved aerodynamic efficiency by 264% and lift by 65% through Active Flow Control with Synthetic Jets. This reattached the blade boundary layer, increasing power by 26 kW/m of span, while using only 6% of the gained power for actuation. It expanded the HAWT’s operational range, improving performance at low wind speeds and reducing aerodynamic loads at high speeds. Awarded the “Hall of Terrassa Award” for outstanding thesis with funding for development. Grade: 10/10.
**Group Project:** Led a 15-person team in a market analysis, design, and feasibility study for a multirole drone, focusing on applications such as cargo transport, firefighting, and surveillance, ensuring it met all technical and operational requirements.
**Membership:** Motospirit ESEIAAT.

### Private Pilot - PPL-A License | EAS Barcelona, Barcelona, Spain

May 2022 - Dec 2022

**Modules:** Aircraft General Knowledge, Flight Performance, Planning Navigation, Operational Procedures, Principals of Flight, Air Law, Human Performance, Meteorology and Communications.

## PROFESSIONAL EXPERIENCE

### MGI Engineering Ltd. | Witney, UK

Mar 2025 - Present

Founded in 2003, MGI Engineering is a consultancy specialising in cutting-edge, tailored technology solutions for the aerospace, marine, and motorsport industries.

#### CFD and Aerodynamics Engineer

- Conducted high-fidelity CFD simulations using OpenVSP and Altair FlightStream to optimise a jet-powered cargo drone's aerodynamics, enhancing performance and efficiency.
- Led the aerodynamic study, analysing drag reduction, lift distribution, and stability for optimal flight.
- Established the aerodynamics and CFD department, implementing industry-standard methodologies and workflows.
- Managed client interactions, providing technical insights and delivering reports on aerodynamic performance.
- Performed flight tests to validate CFD results, correlating predictions with real-world aerodynamic behaviour.

### Vueling Airlines | Viladecans, Spain

Jun 2024 - Sept 2024

A low-cost Spanish airline head-quartered in Viladecans, Spain, operating flights to over 130 destinations across Europe, North Africa, and the Middle East, with a focus on connecting major European cities.

#### Flight Watch Agent

- Tracked Vueling's fleet of 132 aircraft using AIMS software, ensuring 85% on-time performance across flights.
- Requested more than 100 airport slots of new and rescheduled flights in day D and day D+1.
- Managed over 50 daily operational incidents, resolving 99% of cases within the same day D and day D+1.
- Reviewed Minimum Equipment List restrictions and limitations, ensuring 100% regulatory compliance.
- Coordinated with a 30-member team in the Operations Control Centre to execute solutions for real-time disruptions.

### Riera Nadeu S.A | Granollers, Spain

Feb 2023 - Sept 2023

A leading Spanish company specialising in the design, manufacturing, and commercialisation of centrifugal and drying machines used in various industrial processes, including chemical, petrochemical, and food industries.

#### Mechanical and CFD Engineer

- Designed a simplified CAD model of a Spray Dryer via Solidworks aiming on essential components such as the drying chamber, air flow system, ducts and cyclone, reducing modelling time by 50%.
- Established a 4-member CFD department (using OpenFOAM) to analyse and boost the performance of the company's Spray Dryer machine, improving the company's simulation capabilities by 200%.
- Conducted 50+ CFD simulations using OpenFOAM to evaluate the impact of different turbulence models.
- Analysed particle-air interaction within the mixing chamber of a Spray Dryer to intensify the drying process by 15%.
- Performed a vibrational analysis of a centrifugal machine and its inherent post processing via MatLab.

## MOTORSPORT COLLABORATION

### MotoSpirit UPC | Terrassa, Spain

Jun 2022 - Jul 2022

A student organisation dedicated to designing and building an electric motorcycle from the ground up to compete in the international MotoStudent championship, where universities from around the world showcase their skills.

#### Refrigeration and CFD Engineer

- Engineered cooling solutions for the battery pack, targeting on maintaining optimal temperature to prevent overheating and maximise efficiency by 10%.
- Optimised flow pathways through the motorcycle's internal components to enhance drag and thermal management.
- Conducted 10+ CFD simulations to interpret airflow and thermal management within the motorcycle's batteries, optimising cooling efficiency.
- Designed an efficient air duct system to channel airflow from the intake to the battery pack.

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

**Languages:** Spanish (Native), Catalan (Native), English (IELTS 8.0), French (DELFT B1).

**IT Skills:** Confident IT user experienced with CFD software (OpenFOAM, Ansys, Altair FlightStream, OpenVSP, XFLR5, Salome, GMSH, Paraview, Tecplot 360), FEA Software (META, ANSA, MSC Nastran, HyeperMesh), Microsoft Word, Excel, PowerPoint, Project and Outlook, Linux, Matlab, Simulink, C++, LaTeX, Solidworks, Catia, Autodesk Software (AutoCAD and Revit), AVL BOOST, PI Toolbox, MoTeC.

**Individual Interests:** Motorsport, aviation, technology, bike racing, international travel (+20 countries visited), running, fitness, diving, skiing and cooking.

**Licenses & Certifications:** Solidworks Fundamentals Course | EdX; Catia V6 Course | ESEIAAT UPC; Private Pilot License | EAS Barcelona; Driving Licenses: A1, A2, A (motorbike), B (car).

# F I O N A  M A N

FIONAMAN97@GMAIL.COM • 39 High Street, Cranfield, MK430DP • +44753 8669652

## PROFESSIONAL SUMMARY

Advanced Motorsports Engineering MSc student constantly looking to improve, learn from peers and gain valuable experience.

## SKILLS AND ABILITIES

- Pi ToolBox, TwinCat
- Proficient in Microsoft Office (MS Word, Excel, and PowerPoint)
- Proficient in Computer Aid Design (Siemens NX, Solidworks, 3D Experience)
- Over 500 hours of Machine Shop Experience (CNC and Manual)
- Proficient in GD&T
- Knowledgeable in Simulink and Matlab
- ANSYS Fluent and Mechanical
- Avid learner and collaborator
- Fluently bilingual in English and French (Written and Spoken)
- AVL Boost

## WORK EXPERIENCE

05/2024 to 09/2024 CONCORDIA UNIVERSITY

*Manufacturing and Machining Instructor*

- Responsible for the instruction of students and staff in machining and manufacturing processes, machine tool training and laboratory development.
- Assess student's competencies and evaluate student assignments and other deliverables
- Supervise, co-ordinate and schedule the laboratories for undergraduate students.
- Continuous improvement of the Engineering, Design and Manufacturing Laboratory.

09/2022 to 09/2023 ALPINE FORMULA ONE RACING

*Aerodynamics Intern (Wind Tunnel)*

- Responsible for maintenance and operations of the Alpine Wind Tunnel
- Design, manufacture, and test parts that are on the 60% model scale of the race car
- Develop and implement measurement techniques to improve the aerodynamics data acquired.
- Working with hydraulics and control systems to optimize the heave, pitch and roll motion of the model to accommodate the new FIA regulations.

05/2021 to 05/2022 SIEMENS MILLTRONICS PROCESS INSTRUMENTS

*R&D Mechanical Intern*

- Using FEA software to determine the force capacity of components designed by our team
- Using CAD (Siemens NX) software to make modifications based on requirements given for certain applications

01/2019 to PRESENT FSAE ONTARIO TECH RACING

*Mechanical Director, Head of Chassis Department and Senior Machinist*

Ensuring the open communication between the mechanical and electrical departments

- *Example of objective:* Improve packaging of rear, reduce chassis size, improve front to rear weight distribution and transitioning to a carbon fiber monocoque design
- *Example of tasks:* Organization of the shop, optimizing and improving previous cooling systems using different software such as ANSYS and Simscape and manufacturing of all the parts that is needed to make a running vehicle.
- *Example of documentation:* Structural Equivalency Spreadsheet, chassis design report, make and correct technical drawings from all departments and performing simulations such as an impact test and torsional rigidity test using ANSYS.

- 01/2019 to 05/2021 ACE CLIMATIC WIND TUNNEL

*Operations Support in Training*

- Design and manufacture parts based on client requirements
- Work in a fast-paced environment while improving on problem solving skills
- Support with testing in the wind tunnel

# F I O N A  M A N

FIONAMAN97@GMAIL.COM • 39 High Street, Cranfield, MK430DP • +44753 8669652

## EDUCATION

- 10/2024 To PRESENT CRANFIELD UNIVERSITY
  *Advanced Motorsports Engineering MSc*
  *Expected Graduation Date: 09/2025*
- 09/2018 To 04/2024 UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY
  *Graduated - Mechanical Engineering Bachelors (Honors)*
  Final Thesis: *Immersion Liquid Cooled Battery Pack*
- 09/2017 To 04/2018 CONCORDIA UNIVERSITY
  *Mechanical Engineering Bachelors*
- 08/2014 To 05/2017 DAWSON COLLEGE
  *Mechanical Engineering Technology D.E.C – Graduated with Honours*

## ACCOMPLISHMENTS

- Second place in lathe machining in the third Sino-Canada Mechanical Product Design & CNC Machining Skills Competition in Nanjing, China (2017, 2018)
- Third place overall in the third Sino-Canada Mechanical Product Design & CNC Machining Skills Competition in Nanjing, China (2017, 2018)
- TD Bank Group Achieve Your Dream Scholarship Program Award (2017)
  Demonstrated consistent and outstanding dedication to solving a community problem
  - Shown great leadership skills
  - Hold a good academic standing
- Dawson College-Most Outstanding Student Award (2016-2017)
  - Overall highest R score (CEGEP equivalent for GPA)
  - Shown leadership and aid towards other students
  - Demonstrated good work ethic
  - Impactful participation in clubs related to the program
- Dawson College-Honour Roll (2014-2017)
- Fourth place overall in CRC Robotics, Montreal, Canada (2016)
- Second place in CRC Robotics for best construction design, Montreal, Canada (2016)
- Nominated for the Lieutenant Governor Award (2014)
  - Recognition of involvement, determination and constant striving of a student who have had a positive influence in their community
- First prize in FIRST Robotics, Montreal, Canada (2013)
- Forces Avenir Award (2013)

## VOLUNTEERING

- Helped Radical Canada East setup up their vehicles during race weekends with FEL motorsports series such as suspension tune-up and rear wing adjustments
- Mechanic and data engineer for GT Racing with FEL motorsports series.
- Raised over 20 000$ and Participated in the “Enbridge Ride to Conquer Cancer” with the Jewish General Hospital since 2018

# NEIL MARK

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## PERSONAL STATEMENT

Motorsport Mechatronics MSc student at Cranfield University with hands-on experience in MATLAB, Simulink, and MoTeC data analysis tools. Possess a firm grasp in vehicle dynamics, mathematical modelling. Eager to gain real-world industry experience and expand my knowledge.

## EDUCATION

**MSc in Advanced Motorsport Mechatronics,** Cranfield University, Cranfield, UK October 2024 - September 2025

- Relevant Modules:
- Vehicle Dynamics, Electronics and Data Acquisition,
- Motorsport Powertrains, Advanced Control Optimisation
- Embedded Vehicle Control Systems, Mechatronics Modelling for Vehicle Control System
- Advanced Motorsport Mechatronics, Vehicle Control Applications

**B.Tech Mechanical Engineering,** Amity University Dubai, Dubai, UAE September 2019 - September 2023

- Relevant Modules:
- Mechatronics, Design Of Machine Elements, Kinematics of Machines
- Finite Element Methods, Thermal and Fluid Machinery, Engineering Fluid Mechanics

## INTERNSHIP EXPERIENCE

**Automotive Technician Trainee** September 2021 - October 2021

P.P Performance,, Abu Dhabi, UAE

An automotive performance house specialising in ECU Remapping and aftermarket performance enhancements for high-performance road vehicles.

- Trained in diagnosing electrical and mechanical faults across ICE-powered passenger vehicles, focusing on ECUs, sensors, and actuators
- Performed engine and transmission disassembly and reassembly under guided supervision, adhering to workshop standards and OEM specifications
- Learned to identify, isolate, and resolve system faults using diagnostic tools and OBD-based software platforms. Gained hands-on experience with automotive electronics, wiring harnesses, and CAN-bus-based communication protocols
- Operated in a fast-paced environment under strict timelines, improving problem-solving and system-level understanding of powertrains

## PROJECTS AND RESEARCH PAPERS

**Group Design Project** March 2025 - Present

Cranfield University, Cranfield

- Design of Hydrogen Hypercar
- Developed a thermal model of a friction brake system in MATLAB/Simulink, integrating lap simulation data to assess heat flux, rotor temperatures, and validate the thermal sizing and specific heat capacity of braking components
- Developed a driveline model incorporating power and torque curves from AVL CRUISE powertrain simulation to represent ICE behaviour. Modelled drivetrain dynamics including parasitic losses and integrated a gearshift logic, interfacing with a point mass vehicle model for longitudinal performance analysis.
- Developed a Brake-by-Wire control system in MATLAB and Simulink, and validated system performance through Hardware-in-the-Loop (HIL) simulation.

**Design and Comparative Performance Analysis of a TEC based Circulatory Cooli** September 2021 - July 2022

Amity University, Dubai

- Designed and fabricated a liquid cooling vest utilising thermoelectric Peltier modules to manage core body temperature for industrial and medical personnel

- Conducted CFD simulations in ANSYS to evaluate fluid flow and thermal transfer across the model
- Developed a thermal system simulation in MATLAB, modelling 7 stages of heat transfer, including conduction, convection, and fluid flow through tubing and reservoir
- Achieved a temperature drop of 4°C over 40 minutes during real-time testing, reduced skin temperature to 33 °C, demonstrating considerable thermal dissipation compared to commercial alternatives. validating the thermal efficiency of the vest design
- Engineered custom hardware using DC pumps, LiPo batteries, heat sinks, and LM2596 buck converters, ensuring 4+ hours of operational time
- Optimised design for portability and ergonomic balance by relocating thermal modules below the torso, improving centre of gravity and user comfort
- Produced a comparative analysis report supported by temperature profiles, efficiency curves, and cost-performance ratios

**Study on the Effects of Tuned Mass Dampers on Vehicle Ride Performance** September 2020 - April 2021
Amity University, Dubai

- Research paper involving adaptation of technology utilised in the Civil Industry to aid in damping NVH
- Modelled a quarter-car suspension system to analyse vertical vibration behaviour under road disturbances using MATLAB and Simulink
- Designed and optimised a Tuned Mass Damper (TMD) to reduce sprung mass oscillations by tuning natural frequency and damping ratio
- Conducted simulations to compare vehicle body response with and without TMD implementation, achieving up to 48% reduction in peak displacement
- Validated performance utilising time-domain analysis, transmissibility plots, and frequency response functions to demonstrate enhanced ride comfort and system stability

**Study on Electrically Assisted Forced Induction** September 2019 - March 2020
Amity University, Dubai

- Researched hybridisation of forced induction systems by integrating electric superchargers to minimise turbo lag in low-displacement ICEs
- Developed a theoretical framework comparing electromechanical compressors with conventional exhaust-driven turbochargers using thermodynamic performance indices
- Analysed system behaviour across engine speeds, highlighting improved low-end torque delivery and transient response using electric boost
- Proposed a 48V mild hybrid integration strategy and assessed design feasibility with respect to system inertia, parasitic loss, and emissions trade-offs
- Compiled findings in a technical report detailing the performance impact of electrical assistance on BSFC, volumetric efficiency, and compressor map behaviour

## CERTIFICATE

**Nadia Training Institute, Abu Dhabi,** C++ Programming Fundamentals November 2017 - January 2018

- Completed foundational training in object-oriented programming, covering core C++ syntax and functions

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

**Skills**

**Engineering Softwares**

- MATLAB, Simulink, Solidworks, Siemens NX, ANSYS Mechanical and Fluent, AVL Boost, MS Office

**Data Acquisition Tools**

- Motec i2, Pi Toolbox, Atlas

**Extracurrcular Activities**

- Sim-Racing, Music Production, Audio Engineering, Sound Design

# SHWETAANK MODI

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## PERSONAL STATEMENT:

With an intense passion for automobiles, I pursued an undergraduate degree in Automotive Engineering and am now advancing expertise through a master's in Advanced Motorsport Engineering. The goal is to bring innovative solutions and strong leadership to the motorsport industry, turning a deep commitment to motorsport into meaningful contributions to the sport's evolution.

## EDUCATION:

- **Postgraduate Degree**: (October 2024-October 2025)
  - Cranfield University, **MSc Advanced Motorsport Engineering**

- **Undergraduate Degree**: (September 2020-June 2024)
  - Loughborough University, **BEng Automotive Engineering with the Diploma in Industrial Studies**
  - Ranked 2nd in class, 69%
  - Second Class Honours, Upper Division

- **Intermediate**: (CBSE) – March 2018-March 2019
  - Amity International School, Sector 46 Gurgaon: Science Stream (Physics, Chemistry, Mathematics, English and Physical Education)
  - Secured: 91.2%

- **Matriculation**: (CBSE) – March 2016- March 2017
  - Amity International School, Sector 46 Gurgaon (English, German, Mathematics, Science, Social Science)
  - Secured: Cumulative Grade Point Average (CGPA): 10.0

## ENGINEERING RELATED PROJECTS AND EXPERIENCE:

- Experienced in **AVL Boost** and **Cruise M** for powertrain modelling, simulation, and performance analysis.
- Selected for potential collaboration with **Invicta Racing** based on strong technical assignment performance.
- Gained a foundational overview of **McLaren ATLAS** and **Pi Toolbox**.
- **Head of Simulation and Nominated Driver**, *LUMotorsport* (September 2023-August 2024).
  - Built and developed a team from the ground up.
  - Employed **MATLAB** and **IPG Formula CarMaker** extensively for simulation and analysis.
  - Finished 10th in the **Formula Student UK LapTime Simulation Event** and secured the **highest score** and **fastest time** on the Sprint Course.
- Leveraged **SIMULINK** extensively in the final year project, 'AI for Tyre Force Estimation from Vehicle Manoeuvres,' to develop and simulate models for the estimation of tyre forces.
- Utilized **STAR-CCM+** for CFD simulations in the 'Introduction to CFD' module, gaining experience in meshing, boundary condition set up, and aerodynamic analysis post-processing.
- Took part in **on-track vehicle testing** at **HORIBA MIRA**. The testing was a part of a benchmarking exercise for a module's coursework involving **standard coast down tests, in-gear acceleration and constant speed in-gear tests**. The raw data from the tests was processed in a suitable format using **MATLAB** to analyse the powertrain characteristics of the test vehicle. Additionally, also took part in a **vehicle sensor calibration test** which provided an insight into the vehicle's pitching angle during acceleration, cornering and heavy braking cases.
- The Dynamics and Vibration and Control Engineering modules introduced **SIMULINK** modelling.
- **Push-Pull Bar Design Team Member**, *LUMotorsport* (October 2020-June 2021). LUMotorsport is Loughborough University's Formula Student Team.
  - Led the design and manufacturing of a push-pull bar for the team.
  - Leveraged **Siemens NX11** to design the bar components, enhancing proficiency with the software.

- Won the **Outstanding Sportsmanship Award** in the *F1 in Schools* India National Finals 2018-19.
    - Got to use CAD, CAM and CFD software to design, build and test the model cars respectively.
    - Applied various aspects of STEM to excel in different areas of the competition.
- Won the **Overall Performance Award** in the *F1 in Schools* India National Finals 2017-18.
- Served as a **Core Team Member**, *Atal Innovation Mission* (AIM) and *STEM Research and Development Team* (2017-19). Atal Innovation Mission is the Indian Government's flagship initiative to promote a culture of innovation and entrepreneurship in the country.
    - Supervised activities and competitions related to STEM.
    - Collected feedback and made changes to broaden the base of the mission in the school.
- **Won**, *CBSE Science Regional Fair* and a participant at the *CBSE Science National Fair* (2017-18) for the project: '*Prenotare*' (Sustainable Development in Automobiles).
    - Developed a sustainable automotive technology concept which used a combination of power sources to run a vehicle.
    - Evaluated by a panel of distinguished judges from the fields of Science, Technology, and industry, the exhibits were assessed for innovation and impact.

## WORK EXPERIENCE:

- **Intern, Engineering Research Centre, Tata Motors Ltd. (December 2022-August 2023)**
    - Performed ADAS testing, calibration, data analysis and validation for the company's passenger vehicle line up by employing software packages such as **Dewesoft X** and **CANalyzer**.
    - Performed benchmarking tests and studies to help shape the company's ADAS programme.
- **Graduate Trainee Engineer, Bajaj Auto Ltd. (October 2022-December 2022)**
    - Managed a project on steering effort variation between left and right sides for company's 3-wheeler EV line up.
    - Assisted in benchmarking, on-track testing, and meticulous data collection and analysis.
- **Workshop Technician, Jeep India (August 2021-September 2021)**
    - Performed general vehicle check-ups, servicing and got introduced to wheel alignment and balancing.
    - Conducted interior mechanical adjustments and resolved cabin noise.
- **Freelance Automotive Content Writer, CARHP (December 2019-May 2020)**
    - CARHP was an online research and sales portal for a variety of vehicles. It offered a website and user interface designed to primarily focus on bringing one closer to a dream car purchase.
    - Researched and authored articles on diverse vehicle models for the American and Indian markets, published on the company website.
- **Workshop Technician, Volvo India (July 2019-August 2019)**
    - Entrusted for carrying out vehicle servicing and pre-delivery inspection (PDI).
    - Utilized the Vehicle Information and Diagnostics for Aftersales software (VIDA) and customer feedback for fault tracing and analysing a suitable response.

## POSITIONS OF RESPONSIBILITY:

- **Head of Simulation and Nominated Driver**, *LUMotorsport* (September 2023-August 2024)
- **Aeronautical and Automotive Engineering School Representative**, *Loughborough Students' Union* (2023-24)
    - Facilitated in crafting the university's future academic roadmap in collaboration with senior departmental staff and the Pro-Vice Chancellor.
- **Aeronautical and Automotive Engineering School President**, *Loughborough Students' Union* (2021-22)
    - Collaborated with the Vice Chancellor, Pro-Vice Chancellor for Teaching and academic staff on department specific and University issues.
    - Led a team of team of course representatives, responsible for working towards improving the academic experience within the department.
- **Course Representative**, *Loughborough Students' Union* (2020-21)
    - Empowered the cohort by representing academic interests and feedback regarding the course.
    - Acted as a liaison between students and staff to enhance the academic experience.

# Prasannaganapati Manjunath Nayak

Cranfield Univeristy | p.m.nayak.817@cranfield.ac.uk | 07514443644 | LinkedIn

## Professional Statement

An innovative and adaptable individual currently pursuing a Master's in Advanced Motorsport Engineering, with a diverse skill set developed through learning from industry experts. These experiences have sharpened my problem-solving abilities, resilience, and the capacity to thrive in high-performance environments. My hands-on involvement in motorsport projects has equipped me with the skills to meet performance targets efficiently while fostering a creative mindset.

## Education

**Cranfield University, UK**, M.Sc in Advanced Motorsport Engineering **Oct 2024 – Sept 2025**

- **Relevant Coursework:** Powertrain, Structural analysis, Electronics and Data Acquisition, Vehicle Dynamics, Aerodynamics, Computational Fluid Dynamics, Composite Structures, Business of Motorsports

**Chaitanya Bharati Institute of Technology, India**, B.Eng in Mechanical Eng. **Sept 2020 – April 2024**

- **Relevant Coursework:** Automotive Engineering, Computer Aided Design, Thermal Turbo Machines, Thermodynamics and Heat Transfer
- **Undergraduate Thesis:** Design and Analysis of an Electric Bike equipped with an Axial Flux Motor

**Indian Institute of Technology Madras, Online** **Sept 2020 – Sept 2023**
Diploma in Data science and programming

## Experience

**Praheti Racing - SAE CBIT**, Captain – Hyderabad, India **Jan 2021 – Sept 2024**
Formula student team of Chaitanya Bharathi institue of technology

- Managed a team of 46 engineers to design, build, and manufacture a high-performance Formula Student ICE vehicle to compete in Formula Imperial 2022 and Supra 2024
- Achieved a 4th place overall finish in Supra 2024, receiving recognition for an innovative shifter design that enhanced vehicle reliability and driver ergonomics.
- Secured 4th place in design presentation and 1st place in business presentation at Formula Imperial 2022 by devising a marketing strategy to showcase the SAE car to increase awareness and drive sponsor involvement.
- Designed and built a theme-based kart for Red Bull Soapbox Hyderabad 2024, showcasing budget-conscious problem-solving by welding two old bicycles and installing an Ackerman steering system.

**Naxatra Labs Pvt. Ltd**, Design Engineer Intern – Ahmedabad, India **June 2023 – Sept 2023**
Electric motor company specialising in axial flux powertrains

- Developed and prototyped a bike with an axial flux motor targeted to reach speeds of up to 140 km/h and serve as a marketing model for Antarix 2023 motors, which resulted in 40% more engagement in the biker community and key insights on drivetrain design for future models.
- Designed and drafted two axial flux motor casings, one resulting in 34% better air cooling and the other being the first water-cooled prototype
- Designed and fabricated four sub-components for project bikes, enabling their use as test rigs for motor evaluation and battery testing and getting a deeper understanding of how the motor gyroscopic forces affect the rider's feel.

**Truss**, Co-Founder – Hyderabad, India **Jan 2021 – March 2024**
Social networking platform for student entrepreneurs

- Established and headed a team of 7 SDEs to develop a complete platform for student entrepreneurs to get matched and work on similar mindset startup ideas complementing each other's skills.

- Built an MVP that utilised blockchain and smart contracts for security of ideas along with an in-house artificial intelligence based match making system that advanced the company to the 2nd Product Track of the Cisco ThingQbator Competition.
- Created a community of like minded students interested in entrepreneurship that resulted in the formation of the 52nd club of CBIT named Entrepreneurship Development Cell (EDC)

**CBIT College Clubs**, Design lead – Hyderabad, India **March 2022 – Nov 2023**
Served as the department lead for various clubs, primarily assisting with design work.

- Supervised a team of 7 designers in creating visually appealing marketing campaigns and merchandise for college events, which led to 26% more participants during CBIT-MUN 2022 and about 30% additional sponsorship deals for Shruti 2023.

## Skills, Interest & Extracurricular Activities

- **Motorsport Activities**: Currently rebuilding a Formula Ford, Volunteered at inaugural Formula E Hyderabad 2023, Participated in Redbull Soapbox Hyderabad 2024, Constructed a go-kart along with a track for the annual college festival
- **Technical skills**: Ansys(Fluent, SpaceClaim), AVL (Cruise M, Boost), Altair Hyperworks, Solidworks, Fusion 360, Optimum Lap, Ricardo Wave, Microsoft Office Suit, MoTeC i2, PI Toolbox, Microsoft Project
- **Coding Skills**: Python, Matlab, HTML, CSS, Bootstrap, PHP, SQL
- **Languages**: English (IELTS 8.5), Hindi , Kannada (Native), Konkani (Native), Telugu
- **Individual Interests**: professional sketch artist, learning different cooking styles, beginner at boxing, good enough at tennis, basketball and an occasional Lego collector.

# JUAN NOLASCO PÉREZ

## MOTORSPORT AND INDUSTRIAL ENGINEER

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## PERSONAL STATEMENT

A passionate and driven engineer with hands-on motorsports experience as Powertrain Manager for Formula Student Bizkaia. Demonstrated leadership, adaptability and technical expertise while managing a team in designing and developing the team's first all-wheel-drive electric vehicle. Experienced in both motorsport competition and team management, with a focus on continuous learning and a commitment to innovation. Currently studying an Advanced Motorsport Engineering MSc. at Cranfield University as part of a double-degree programme with the University of the Basque Country. A highly motivated individual with excellent teamwork abilities, a strong collaborative spirit, and exceptional communication skills, dedicated to achieving collective goals and fostering positive work relationships.

## KEY ACHIEVEMENTS

- Led the design of the first AWD electric vehicle in the history of Formula Student Bizkaia, achieving 2$^{nd}$ place at the 2022 FSUK Design Finals.
- Designed and manufactured the powertrain that won the 2024 'FSUK Powertrain of the Year' award, securing FSB's victory in the electric category.
- Lived and studied throughout Europe, gaining linguistic fluency in Spanish, English (C2), and German (B2).
- Consistently ranked in the top 10% of the engineering cohort, with a final grade of 9.61/10 for the Industrial Engineering BSc, demonstrating strong dedication and academic excellence.
- Restored, prepared and raced classic Fiat Pandas at amateur rally-raid events in Spain and Morocco.

## EDUCATION

**Advanced Motorsport Engineering MSc,** Cranfield University, Cranfield, UK — Oct 2024 – Sept 2025

Modules: Powertrain Systems, Structural Analysis, Vehicle Dynamics, Aerodynamics, Electronics and Data Acquisition, Business of Motorsport, Computational Fluid Dynamics, Composite Structures.
Collaborating on the restoration of a 1990s Formula Ford for Cranfield's 25th MSc anniversary showcase.

**Industrial Engineering MSc,** University of the Basque Country, Bilbao, Spain — Sept 2023 – Sept 2025

Modules: Structural design *(*Hons*)*, Electronics and Control *(*Hons*)*, Thermal Engines, Automotive Engineering, Business Administration, Electric Systems, Machine Failure Analysis, Energy Sources, Integrated Manufacturing Processes, Transportation, Urban Design and Industrial Construction.

**Industrial Engineering BSc,** University of the Basque Country, Bilbao, Spain — Sept 2019 – July 2023

Modules: Manufacturing Processes *(*Hons*)*, Materials Science *(*Hons*)*, Technical Graphics and Design, Algebra, Calculus, Mechanics, Physics, Chemistry, Electronics, Electric Machines, Thermodynamics, Computer Programming, Structural Analysis, Economics, Statistics.
Final grade: 9.61/10
Thesis Project: Gear calculations and design for a sequential gearbox. Final grade: 9/10.

**Mechanical Engineering BSc,** Friedrich-Alexander-Universität, Nuremberg, Germany — Sept 2022 – Mar 2023

Modules: Linear Continuum Mechanics, International Supply Chain Management, Production Technology, Integrated Production Systems.

## MOTORSPORT EXPERIENCE

**Formula Student Bizkaia,** Bilbao, Spain 2020-2022

Formula Student Bizkaia is a top Spanish team competing in European competitions, pioneering the country's electric vehicle category with its AWD electric race car. The Powertrain group designs and integrates key components, including motors, controllers, and battery systems, to maximise the vehicle's performance and efficiency.

Powertrain Group Manager Sept 2021- Sept 2022

- Oversaw the design, development, and optimisation of the powertrain system, including batteries, inverters, and motors, for the team's first AWD electric vehicle.
- Coordinated a team of 10 engineering students, overseeing critical project timelines and budgets, finishing the season with a strong 2nd place finish in the Design Finals at Formula Student UK.
- Designed and manufactured the powertrain system that won the 2024 'FSUK Powertrain of the Year' Award and gave FSB the triumph in the electric field category of the FSUK competition.

Powertrain Group Member Sept 2020 – Sept 2021

- Played key role in the manufacturing, validation, and assembly of the last rear-wheel drive electric vehicle of FSB, achieving full readiness of the vehicle 4 months prior to competitions.
- Led on-track vehicle testing to analyse performance data and optimise the powertrain system, maximising in-competition performance. Over 250 km of testing were completed before the summer events.

## SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES

**2023 and 2024 Formula Student Spain Accumulator Scrutineer**

- Volunteered with the FSS Scrutineering Team, conducting accumulator inspections and full pre-/post-scrutineering at events. Performed technical analysis of electric battery systems and provided teams with detailed feedback for design improvements and future modifications.

**Van Diemen RF92 Formula Ford restoration project**

- Currently taking part in the restoration project of a 1990s Formula Ford alongside Cranfield University colleagues.
- Executing a full car teardown and restoration, and engine and transmission rebuild.

**Formula Student Bizkaia Alumni Team**

- Co-founded the FSB Alumni Team in 2023, initiating a project to restore the FSB 2009 internal combustion engine (ICE) vehicle in collaboration with fellow alumni.

**Amateur Rally Raid**

- Restored and prepared various 1980s Fiat Pandas, 4x4 and FWD, competing and racing in amateur rally-raid events both in Spain and Morocco.

**Technical Graphics teacher,** PrimeraN study centre, Leioa, Spain Sept 2023 – Sept 2024

- PrimeraN is an after-school tutoring centre that provides personalised academic support for students aged 7 through to university.
- Prepared students for engineering university access exam (A-levels equivalent) in groups of up to 7 students.
- Taught engineering design principles, perspectives and views, and technical drawing skills.

**Bizkaia Talentia Programme** 2020 – 2023

- Selected for a publicly and privately funded initiative recognising top students, offering mentorship and soft skill development programmes, and fostering connections with industry leaders to enhance professional development and global career opportunities.

**Team Sports - Roller Hockey,** CD Urdaneta, Loiu, Spain 2012 – 2023

- Played competitive roller hockey for over a decade, fostering discipline, teamwork, and strategic thinking.

**Technical Skills:**

- Passion and in-depth knowledge of internal combustion engine (ICE) powertrain systems and hybrid powertrain technologies, with a focus on performance and efficiency optimisation.
- Expertise in mechanical design principles, design for manufacturing, and structural analysis and optimisation.
- Design, manufacturing and assembly of electric motors, batteries, and live HV systems.
- Extensive experience with composite structure manufacturing, both with prepreg and hand-layup, and with both carbon and aramid fibres.

**IT Skills:** proficient in the use of CAD software (**Catia V5 / V6 / 3DX, Solidworks, AutoCAD**), FEA analysis (**Ansys Workbench & Hypermesh**), Microsoft Word, Excel, Powerpoint, **Matlab**, **Simulink**, Keysoft, **KISSsoft** (gear calculation), **AVL BOOST** (Powertrain Simulation), CFD (**Ansys Fluent**).

**Languages:** **Spanish** (native), **English** (Cambridge C2), **German** (B2).

**European Driving License:** category B

# OLIVER W.R. PAESHUYS

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Electromechanical Engineer, BY950, Baroness Young Hall, The Drive, Cranfield, MK43 0SR

## PERSONAL STATEMENT

Graduated from the University of Ghent by completing a master in Electromechanical Engineering before joining the Advanced Motorsport Engineering course at Cranfield University. Able to adapt to different environments and tackle new projects through analytical and critical thinking while being under pressure. Dedicated to collaborative, multidisciplinary teamwork for innovation and excellence while taking responsibilities and showing commitment. Interest in structures, composites and mechanical design.

## EDUCATION

**MSc, Cranfield University, Cranfield, UK** **October 2024 - September 2025**

- **MSc in Advanced Motorsport Engineering**
- **Courses:** Motorsport Powertrain Design, Motorsport Electronics & Data Acquisition, Motorsport Vehicle Dynamics, The Business of Motorsport, Motorsport Aerodynamics, Motorsport Structural Analysis, Computational Fluid Dynamics for Motorsport, Composite Structures for Motorsport

**MSc, Ghent University, Ghent, Belgium** **January 2022 - June 2024**

- **MSc in Electromechanical Engineering: Mechanical Construction**
- **Individual thesis at the Department of Materials, Textiles and Chemical Engineering**

**Bachelor Of Science, Ghent University, Ghent, Belgium** **September 2018 - June 2022**

- **Bachelor Of Science in Engineering: Electromechanical Engineering**

## CAREER HISTORY

**Ghent University, Ghent , Belgium, Master's Student** **September 2023 - June 2024**
Individual thesis: *Analytical and Experimental Evaluation of Carbon Fibre Monocoque for Formula Student Cars: Material Selection, Production and Insert Integration*

- Founded a good understanding of current design and manufacturing methods for a Formula Student monocoque chassis by means of literature review and producing prototype moulds based on CAD design
- Explored the production of sandwich material plates using different core materials, skin fabric weaves and production methods (prepreg versus Vacuum Assisted Resin Infusion)
- Established insights into the mechanical behaviour of different sandwich materials through analytical modelling, comparative testing (three point bending and tensile testing) of specimens and microscopic evaluation
- Investigated different embedding methods for inserts in sandwich panel specimens and compared hypothesis with results obtained through pull-out testing. Testing included the design of a clamping set-up for specimen positioning
- Demonstrated effective planning by organizing weekly meetings with supervisors to present the status of the research, setting priorities, and managing time efficiently to achieve goals
- Incorporated feedback from supervisors, researchers and people in industry, in choice making

**UGent Racing, Ghent, Chassis Design and Production Member** **September 2020 - June 2022**
Member of Formula Student team at Ghent University

- Engaged in setting up the UGent Racing team during COVID 19 pandemic and created the team's first generation competition car
- Accomplished the 3D design of tubular spaceframe chassis for Formula Student car using Solidworks
- Led a team of three in the production of tubular spaceframe chassis for Formula Student car by plasma cutting and TIG welding the different tubes following a predefined pattern based on jigs
- Mastered a strong and clear way of daily communicating with team members to guarantee an efficient and qualitative manufacturing process of the chassis, respecting the build schedule

## PROJECTS

**Front Impact Absorption Structure design and simulations, Cranfield University** **March - May 2025**

Structural design and simulation of impact structure for hydrogen LMH concept car

- Bio-composite material selection based on regulations for energy absorption and static load requirements, as well as design criteria like weight and stiffness
- Designed geometry in order to guarantee required energy absorption using Solidworks and Spaceclaim
- Defined composite layup using ANSYS ACP as well as using LS-Prepost directly
- Analysed structural performance using the LS-DYNA explicit multiphysics simulation software
- Validated simulation results using experimental testing of material samples

**Hypermesh (similar to Abaqus) F1 Pedal Design Optimization, Cranfield University** **January 2024**

Topological and structural optimization of F1 brake pedal (project presented by Red Bull Racing)

- Determined load-path within a brake pedal based on position and geometry of the pedal
- Selected appropriate material based on weight, strength and stiffness targets
- Performed topological optimization of initial pedal design based on expected loads and with aim of reducing weight
- Identified stress concentrations and validated stress flows predicted by hand calculations using FEA
- Assessed the fatigue life of the pedal based on maximum stress values obtained through hand calculations and FEA simulations

## SKILLS & INTERESTS

**Technical Skills:**

- Problem Solving
- Analytical Analysis
- Data Analysis
- Materials Science
- Computer Aided Design
- Welding
- Composite manufacturing (VARI)

**Software Skills:**

- Python, MATLAB
- Microsoft Office Suite (Word, PowerPoint, Excel)
- Solidworks, Spaceclaim, FreeCAD
- Hypermesh, ANSYS Fluent, ABAQUS, LS-DYNA, LS-Prepost
- AVL Boost

**Languages:**

- Dutch (Native), English (C1), French (Limited working proficiency)

**Soft Skills:**

- Teamwork and Collaboration
- Project Management
- Proactive and self-motivated
- Communication
- Time management
- Creative thinking
- Initiative

## EXTRACURRICULAR ACTIVITIES

**Vita et Pax College, Schoten , Belgium, Volunteering** **September 2017 - January 2018**

- Volunteering and giving disabled children the chance to enjoy sports and learn how to play field hockey
- Learned to navigate unfamiliar situations with patience and empathy, tailoring coaching methods to meet individual needs and build confidence among participants
- Developed leadership, mentoring, and communication skills. Encouraged children's growth and teamwork

## REFERENCES

**Prof. dr. ir. Wim Van Paepegem**

Professor at the Department of Materials, Textiles and Chemical Engineering (University of Ghent)
Relationship: Supervisor during master's thesis

**Prof. dr. ir. Sebastian Verhelst**

Professor at the Department of Electromechanical, Systems and Metal Engineering (University of Ghent)
Relationship: Teacher for the following courses:

- Displacement Pumps, Compressors and IC Engine Fundamentals
- IC Engines: advanced design and research

# Sebastian Piper CV

## Contact Details

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Email: swjpiper@gmail.com

## Personal Summary

As a dedicated Motorsport Engineer with a decade of hands-on experience in powertrains, and systems design, with a proven track record of optimizing performance in off-road and track environments.

## Academic Qualifications

- MSC Advanced Motorsport Engineering – 2:1 (expected) (2024 - 2025)
- BEng Advanced Motorsport Engineering - 2:1 (2019 - 2022)
- FdEng Advanced Motorsport Engineering – 2:1 (2018 - 2019)
- Level 3 Extended Diploma Advanced Motorsport Engineering - Merit (2016 - 2018)
- Level 2 Extended Diploma Advanced Motorsport Engineering - Pass (2014 - 2016)

## Technical Skills

- MATLAB
- Simulink
- McLaren ATLAS
- SolidWorks
- AVL Cruise M & Ricardo WAVE
- Vehicle Setup
- Fabrication
- Machining

## Professional Experiences

Engine Modelling Experience

- Lead powertrains department in group project designing a hydrogen converted LMPH car.
- Developed several high-quality models over a short amount of time in both MATLAB and AVL Cruise M
- Developed several engine tunes for each engine model over the given time to provide team with a wide variety of potential power and torque curves.

Practical Engine Experience

- Rebuilt several engines ranging from basic inline 4’s to complex boosted V6 engines and tuned for maximum efficiency whilst maintaining expected power and torque outputs
- Diagnostic tools experience and communication with customers on their problems
- Using feedback data from drivers and simulations, I have developed components to be manufactured to improve the overall performance of the engine.

# PETER ROBINSON

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www.linkedin.com/in/peter-robinson-2b4617244

## PROFILE

Throughout education, key teamwork and technical skills were developed, forming a strong foundation for professional achievements. Currently working as a freelance first mechanic, with over a years experience as a self-employed motorsport vehicle technician which both involve running, fixing, and rebuilding sports-prototype vehicles. Other key responsibilities include ensuring smooth operations at race events, managing individuals on work experience, and leading tasks such as loading the Arctic Lorry all while sponsoring a professional attitude. Educational and professional experiences, affirmed by references, evidence an inquisitive, intuitive, and empathetic attitude, quickly building rapport within teams and committed to success.

## EDUCATION

**MSc in Advanced Motorsport Engineering,** Cranfield University, Cranfield, UK October 2024 - September 2025

- Commencing the MSc at Cranfield University has been a test of character and technical skills. This journey has fostered lasting friendships and valuable industry connections.
- Relevant subjects accomplished so far: Motorsport Powertrains, Motorsport Electronics and Data Analysis, Motorsport Vehicle Dynamics, Business of Motorsport, and Motorsport Aerodynamics.
- Relevant software: AVL Cruise M, AVL Boost, Python, Matlab, PI Toolbox, and Motec.

**BEng Hons in Motorsport Technology,** Wiltshire College and University Centre, Chippenham, Wiltshire. October 2022 - July 2023

- Graduated with an Upper Second-Class degree in Motorsport Technology at Castle Combe, demonstrating strong focus and resilience in overcoming challenges to achieve goals. Obtaining a First-Class grade for the dissertation represented a significant academic achievement and passionate project.
- Skills honed and connections established during undergraduate studies were instrumental in shaping professional abilities and personal growth.
- Relevant software: Adams View, Solidworks, Catia V5, MATLAB, and Aim Race Studio.

**FdEng in Motorsport Engineering,** Somerset University Centre, Bridgwater , UK. September 2020 - May 2022

- Studies led to a passion for 3D design and the use of MATLAB software. Lifelong friendships were forged, and valuable experience was gained with various software tools and engineering practices.
- Relevant software: Solidworks, MATLAB, OBR software, Aim Race Studio and Autodesk Cam software.
- Relevant experience: Race car preparation, workshop practices, and race weekend experience.

## CAREER HISTORY

**First Mechanic** September 2023 - Present
Freelance, Milton Keynes, UK
RJ Motorsport

- Incharge of the complete set-up and running of at least one vehicle, direct loading and unloading the Lorry, awning construction and deconstruction, leading at least five team members, sustain a highly professional attitude.
- Developing strong teamworking experience, building upon effective communication, practising race-car preparation, proficient geometry set-ups, and robust interpersonal skills, such as leadership, independence and communication.

**Motorsport Vehicle Technician** July 2023 - September 2024
Self-employed, Devon, UK
RJ Motorsport

- Established skills in the workshop, including proficient geometry set-ups, corner weighting, engine removal & refit, bodywork fitting, routine maintenance, and winter preparations including complete vehicle teardown and rebuild.
- Trusted responsibilities included, being a key holder, delivering and collect components, diagnosing and repairing issues, routinely leading up to 3 work experience attendees, all while working in a timely and efficient manner.

**Vehicle Technician** June 2021 - August 2022
Freelance, Devon, UK
Blairs Garage - Independent Porsche Specialist

- Specialised in restoring and servicing classic and high-end vehicles, further enhanced technical abilities, fault-finding skills, and up to 8 hours of independent work.
- Entrusted in setting up, refurbishing, and maintaining a collection of 4 classic racing motorcycles.

**PROFESSIONAL EXPERIENCE**

**Motorsport Vehicle Technician** September 2018 - June 2019
Bridgwater and Taunton College, Bridgwater, UK.
Bridgwater College had a race team based out of their workshop.

- Devoted wednesday evenings to assisting peers with work on Sports Prototype racing vehicles, which led to our victory in the 2019 750mc Bike-Sports Championship.
- Began developing foundational skills through cleaning and preparing components for race events while helping team members perform essential maintenance on more than three vehicles.

**Vehicle Technician** July 2017 - July 2017
Eden Mazda Taunton, Somerset, UK
Main Dealer Garage - Work Experience

- Collaborated with Eden technicians to observe, learn, and expand knowledge of car construction and mechanics. Often working between three technicians at a time.
- Entrusted with removing and replacing various suspension and engine parts over one week, performing vehicle maintenance and oil changes, assisted with general maintenance of motor vehicles, remove and refit tyres.

**Race Mechanic** April 2016 - April 2016
Private Race Team of Anthony Bennett, Salisbury, UK.
Work Experience

- Collaborated one-to-one with an experienced motorsport mechanic developing skills related to running and repairing Anthony Bennett's two Caterham 420Rs.
- Assigned responsibilities included assisting on the race day, helped to maintain six vehicles outside of weekend in the workshop.

**SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES**

**Personal Interests**

- My passion for motorsports began at an early age, when I used to race Go-Karts with my family. I enjoy delving into the mechanics of high-performance vehicles and the principles behind every day and specialised technologies. In my free time, I relish hands-on projects, whether I am converting my campervan or undertaking practical jobs in the garden. My curiosity extends to outdoor adventures and staying active, often planning road-trips around the UK. I am an inquisitive and passionate individual who is constantly striving for personal development and making a positive difference in the lives of those around me, whether through my work or personal interactions.

**BEng Hons - Dissertation**
**Research the Principals of Hydrogen as a Fuel Source**

- Achieving a First-Class grade strengthened confidence in technical and problem-solving abilities.
- Explored the use of hydrogen as a green alternative fuel by modifying a modern 2.5kW carbureted generator. While the topic presented technical challenges, it addressed the growing need for sustainable replacements for petrol.
- Discovered key issues when operating the engine at its stoichiometric ratio, high levels of nitrogen oxides (NOx) were produced. Focus then shifted to reducing NOx emissions, finding an equivalence ratio of 0.8 was optimal.

**Duke of Edinburgh's Award**
**Silver and Bronze - February 2017 to April 2018**

- Volunteered at ColdHarbour Mill where I worked with a volunteer group preserving a working steam engine.
- Volunteered at a local Youth Club, responsible for handling money and overseeing service users.

# SERGI ROURES VIVES

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Cranfield, United Kingdom

To LinkedIn profile:

## PERSONAL STATEMENT

Postgraduate Industrial/Mechanic engineer specialising in Motorsports, passionate about CAD design, aerodynamics, structural analysis, and vehicle dynamics. With hands-on experience in high-performance vehicle systems, dedicated to pushing the boundaries of automotive technology. Project experiences include designing innovative suspension systems and optimising vehicle performance, incorporating advanced CAD modeling, finite element analysis, and dynamic simulation to achieve cutting-edge results. Committed to teamwork, adaptability, and technical ingenuity. Skilled at managing resources and fostering strong relationships with both clients and team members, and professional expertise complemented by multilingual communication skills, refined through academic and practical experiences worldwide.

## KEY ACHIEVEMENTS

**Sant Josep de Badalona, Barcelona, Spain, Basketball Point Guard** Sept. 2015 - June 2016

- Secured the runner-up position in the junior league FCBQ Cup, demonstrating exceptional performance with season averages of 8.7 points and 4.1 assists. Enhanced leadership and teamwork skills, thriving in a cross-cultural setting and contributing to high-pressure team dynamics.

**Multidisciplinary Academic Success, Karlsruhe, Student** March 2022 - Oct. 2022

- Successfully completed an intensive Erasmus program in Karlsruhe, managing a BSc thesis, German language course, and five engineering subjects in German and English. Demonstrated exceptional adaptability and time management, excelling in a challenging, multilingual environment together with acquiring capability for rapid learning and integration into diverse teams.

**Personal Vehicle Maintaining** Sept. 2019 - Present

- Assuming full responsibility for the upkeep and maintenance of a diverse personal vehicle collection, including a Porsche 911 996 Carrera 4S, a Mini Cooper Cabrio, a 1955 Fiat 600, and several vintage motorcycles. Developed comprehensive maintenance schedules and performed hands-on repairs and upgrades, significantly enhancing vehicle longevity and performance.

**Ongoing Formula Ford Racing Car Restoration Project, Cranfield University** Jan. 2025 - Present

- Currently contributing to restoring a Formula Ford, encompassing disassembly, detailed component analysis, and reassembly. Successfully enhancing operational efficiency and vehicle performance, preparing for final track testing to validate project outcomes, teamwork and multiple sections overseeing capability.

## EDUCATION

**Double MSc Degree in Advanced Motorsports Engineering, Cranfield University, Cranfield, UK** Feb. 2023 – Sept. 2025

- Modules: Motorsports Powertrains, Electronics and Data Acquisition, Vehicle Dynamics, Business, AERO, Motorsport Structural Analysis, Computational Fluid Dynamics for Motorsports and Composites Structures for Motorsport.
- Projects: Regular and F1 Powertrain Modification and Optimisation; Aerodynamic Study of a Race Car Model inside a Wind Tunnel; Design and Structural Analysis of a Brake Pedal for RedBull F1 2015 Race Car; CFD study of a F1 Front Wing; CF Wing Fabrication and Analysis.
- Ongoing Relevant Projects: Relevant Projects: Full chassis designing, testing and simulating of an H2 adapted Hypercar for LeMans 24hCompetition expertising in SolidWorks, Hypermesh and LS-Dyna in a time-strict project, fosteringadaptability and multitasking in a diverse working environment. Masterized knowledge in Composites, their geometries, properties, optimal quantities of plies and tests.

**Double MSc Degree in Industrial Engineering, specialised in Mechanics, ETSEIB, UPC, Barcelona** Feb. 2023 – Sept. 2025

- Modules: Machine Calculus, Thermal Machines, Hydraulic Machines, Structures, Fabrication Systems, Chemical Technology, Transports optimisation, Energy Technology.

**BSc in Industrial/Mechanical Engineering, ETSEIB, UPC, Barcelona** Sept. 2017 – Sept. 2022

- Bachelor's Thesis: "Design of a RC F1 Suspension at Scale 1:5".
- Modules: Fluid Mechanics, Machine and Mechanisms Theory, Advanced Thermodynamics, Calculus and Algebra, Electronics Basics and Advanced, Materials Resistance, Theory of Materials, Advanced Mechanics, Advanced Control.

## CAREER HISTORY

**Rennsport Taller Porsche, Barcelona, Automotive Mechanic Assistant** Dec. 2022 – Dec. 2023

Porsche automotive workshop, proficient in repairing, maintenance and customisation, delivering expert service with a focus on precision and track performance.

- Enhanced performance for over 100 Porsche vehicles using Porsche PIWIS and general mechanical and automotive knowledge for precise diagnostics and efficient repairs, resulting in a 20% increase in overall operational road and track efficiency.
- Reported to the general mechanic with diagnosing issues, performing routine servicing, and ensuring high-quality workmanship, while being 100% responsible of regular-use Porsches/BMW's operations.

**Academia Ceus, Barcelona, Instructor of Calculus 1** Sept. 2020 - Feb 2021

CEUS Academia in Barcelona, centered in providing academic support and personalised tutoring services for students, targeting industrial engineering modules to help students improve their academic performance.

- Delivered comprehensive instruction in Calculus 1 to first- and second-year Industrial Engineering students, focusing on function analysis, integrals, derivates, and Fourier series and adapting to current concepts.
- Assessed student progress through the design and administration of partial and final exams, while providing additional support in MATLAB programming for this sowtfare-applied module projects and practicals.

**Auto Taller Moya, Viladecans, Barcelona, Business Stay, Mechanic Tecnician** June 2016 – Aug. 2016

Auto repair shop in Viladecans, Spain, offering a range of services including diagnostics, general repairs and maintenance for various vehicle brands. Known for quality and customer satisfaction.

- Assisted in diagnosing and repairing daily use cars, complementing in routine maintenance tasks while learning and performing on a large variety of vehicles under expert supervision.
- Developed key skills in automotive repair and diagnostics, significantly boosting operational efficiency and gaining expertise across approximately 40 different vehicle models.

## ACADEMIC PROJECTS

**UPC Barcelona, Barcelona, Spain, AEROS Engineer, ETSEIB, Formula Student Team** April 2023 - May 2024

- Employed SolidWorks, Ansys and Microsoft Office Pack for aerodynamic design and optimization of the Formula Student vehicle, improving airflow and dynamics through detailed simulations. Gained Ansys Fluent knowledge for CFD analyses, significantly improving aerodynamic efficiency and optimizing airflow in competitions.
- Treated surfaces with CATIA to design and refine aerodynamic surfaces, focusing on optimizing curvature and smoothness for improved flow dynamics. Enhanced my proficiency in surface modeling and precision.

**UPC Barcelona, Barcelona, Spain, Bachelor's Thesis: "Design of a Radio Control F1 Suspension at Scale 1:5"** May 2022 - July 2022

- Designed the front suspension of a whole 1:5 scale Formula One RC, optimising its geometry parameters and performance on different competition circuits through self-learning in the matter.
- Expertised my SolidWorks skills and vehicle dynamics knowledge through a totally non-assisted 600h+ project, which concluded in a more sophisticate, lighter and race-wise better performing suspension.

## SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES

**Software competences:** Python, Microsoft Excel, PowerPoint, Word, SolidWorks, Ansys, AVL BOOST, AutoCAD, Diamonds, HyperMesh 2022, SpaceClaim, Ansys Fluent (CFD), CATIA, LS-DYNA and Windows PowerShell.

**Languages:** Native Catalan and Spanish, fluent English and German, and known intermediate of French.

**Certificates:** C1, Advanced (British Council and IELTS), B1, Goethe - Zertifikat (Goethe Institut), with a B2.3 course completed, B1 Français (Institut Français de Barcelona).

**Foreign Experiences**

- Karlsruhe, Germany (2022): Erasmus studies in Karlsruher Institut für Technologie.
- Schwäbisch Hall, Germany (2017): Intensive course at Goethe Institut for B1 test.
- Munich, Germany (2019): Intensive course at Goethe Institut for B2 test.
- Las Vegas, NV (USA) (2015): IMPACT Basketball Camp.
- Easthampton, MA (USA) (2012 - 2014): World Sports Camp.

**Extracurricular Activities**

- Basketball coach for semi-professional senior leagues for 2 years. Learned how to lead and achieving time-defined goals, and mentored such individual as collective skills.
- Physical training to overcome two consecutive ACL ruptures. Obtained resiliance, consistency, discipline and mental strenght for a stronger comeback.

# ARNAU SÁNCHEZ i FORNS

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## PERSONAL STATEMENT

An MSc Advanced Motorsport Engineering student with a passion for innovation and problem-solving. Experience includes leading the aerodynamics team at BCN eMotorsport and working as a Mechanical Design Intern at CDEI-UPC, contributing to forklift design and structural simulations. Holds certifications in SolidWorks and possesses skills in Python, CREO, and 3D printing, providing a strong technical background. Experience as a basketball coach and tutor has instilled values of teamwork, respect, and communication. Thrives in collaborative environments and aims to drive meaningful improvements in engineering projects.

## KEY ACHIEVEMENTS

- Achieved P2 in the Autonomous competition at Formula Student Spain in 2023.
- Accomplished P1 in the manual Autocross event at Formula Student Spain in 2023.
- Reached the final of the Design Event at Formula Student Spain in both 2022 and 2023.
- Secured P4 out of 35 teams in the Business Plan Event at Formula Student Italy in 2023.

## EDUCATION

**MSc Advanced Motorsport Engineering, Cranfield University, Cranfield, UK** **October 2024 - September 2025**

- **Modules:** Induction and Introduction to Motorsport, Motorsport Structural Analysis, Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Motorsport Aerodynamics, Computational Fluid Dynamics for Motorsport, The Business of Motorsport, Composite Structures for Motorsport, Motorsport Powertrains.

**Master's Degree in Industrial Engineering, ETSEIB (UPC), Barcelona, Spain** **September 2023 - September 2025**

- **Modules:** Electronics Development, Process Control, Machine Calculation, Industrial Organization, Electric Technology, Machine Technology, Structures Theory, Business and Management, Construction and Industrial Architecture, Hydraulic Machines, Thermal Machines, Transports, Machinery project, Human Resources, Energy Technology and Chemistry Technology.

**Degree in Industrial Engineering, ETSEIB (UPC), Barcelona, Spain** **September 2018 - July 2023**

- **Modules:** Thermodynamics, Fluid Mechanics, Materials, 3DCAD design, Structures, Materials Resistance, Mechanics, Automatic Control, Statistics, Finite Elements study, Machines and Mechanisms theory, Manufacturing Systems, Business and Management, Electromagnetism, Simulation and Optimization, Electric Machines.

- **Thesis Project:** "Validation of the Aerodynamic Package of a Formula Student Vehicle" – Conducted a validation study on the aerodynamic package of a Formula Student vehicle, comparing CFD simulation results with real-world data through data analysis. The analysis focused on key aerodynamic parameters and airflow behaviour to assess the reliability of CFD as a design tool and evaluate how closely the car's performance matched design expectations.

**Technological Baccalaureate, Escola Pia Sarrià, Barcelona, Spain** **September 2016 - July 2018**

- **Thesis Project:** "Market Comparison of Electric and Combustion Cars" – Conducted a market analysis comparing electric and combustion vehicles, focusing on engine characteristics, driving range, environmental impact, and technical specifications to assess competitive landscape and future potential.

## CAREER HISTORY

**CDEI-UPC, Barcelona, Spain, Mechanical Design Intern** **September 2023 - October 2024**

CDEI-UPC is a technological innovation centre at UPC, specialising in machinery engineering and excelling in all stages from concept design to simulation, prototyping, and product testing.

- Developed forklift components for AUSA, employing CAD software to create efficient and reliable designs meeting performance and safety standards

- Utilised FEA tools to perform structural simulations, validating mechanical designs and achieving a 10% improvement in load-bearing capacity while optimising material usage for greater cost-effectiveness

**BCN eMotorsport, Barcelona, Spain, Aerodynamics Chief Engineer** **September 2022 - August 2023**

Based in Barcelona, our cutting-edge motorsport team specialises in developing electric and autonomous racing vehicles for the Formula Student competition, proudly recognised as Spain's top team, leading in innovation and performance.

- Led a team of six in the Aerodynamics department, ensuring a seamless integration of skills and expertise across the team by mentoring and transferring knowledge to new members
- Developed the aerodynamic package for a Formula Student race car, achieving performance improvement by increasing the lift coefficient by 11% while maintaining aerodynamic efficiency
- Oversaw the manufacturing process of over 40 aerodynamic components, coordinating with 3 departments and various suppliers to ensure high-quality production and material sourcing
- Performed 40 hours of real-world testing to validate the aerodynamic package, data collection, and a thorough data analysis to correlate the real performance of the car with the intended specifications
- Presented the aerodynamic and cooling design defence at three competitions (Germany, Italy, and Spain) and the business plan presentation of the car in Italy, showcasing strong communication and presentation skills

**BCN eMotorsport, Barcelona, Spain, Aerodynamics Engineer** **September 2021 - August 2022**

Based in Barcelona, our cutting-edge motorsport team specialises in developing electric and autonomous racing vehicles for the Formula Student competition, proudly recognised as Spain's top team, leading in innovation and performance.

- Designed the undertray and contributed to the car's aerodynamic package using CAD and CFD, collaborating with the engineering team to integrate aerodynamic improvements, enhancing performance and efficiency
- Acquired extensive expertise in the manufacturing process with high-end racing materials, gaining valuable insights into designing carbon fibre components, enhancing the reliability and performance of racing parts, and contributing to a 30% weight reduction of the aerodynamic elements
- Defended the "Cost and Manufacturing" aspects and aerodynamic design in two separate competitions by presenting detailed analyses and answering judges' questions

**Escola Pia Sarria, Barcelona, Spain, Basketball Coach** **September 2017 - August 2018**

A renowned educational institution in Barcelona that emphasizes both academic excellence and extracurricular engagement. The school offers a variety of sports programs, including basketball.

- Instilled values of teamwork, engagement, communication and effort in a team of 12 players, motivating them through inspirational and supportive coaching while fostering a positive and collaborative environment
- Led educational initiatives for two different teams of 12 players, directing on respect among team-mates and with rival teams, fostering personal and athletic growth and promoting sportsmanship

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

### Languages

- Catalan (Native), Spanish (Native), English (Fluent)

### Softwares

- Python, Matlab, AVL Boost, SolidWorks, CREO Elements, CREO Parametric, Blender, Ansys Fluent, OpenFOAM, Altair HyperMesh and UltiMaker Cura

### Certificates

- CSWA (Certified SOLIDWORKS Associate in Mechanical Design)
- CSWP (Certified SOLIDWORKS Professional in Mechanical Design)
- Time Management, Leadership, Project Management and Agile PM with SCRUM & Systems Engineering - Invensity

### Interests

- Passionate about sports such as basketball, climbing, boxing, padel, and gym training, showcasing discipline, resilience, teamwork, and a commitment to accomplishing goals. Keen interest in chess, reflecting strategic thinking, problem-solving, patience, and adaptability. Enthusiastic about Formula Student and Formula 1, highlighting a focus on engineering, innovation, teamwork, and precision. Additionally, value quality time with family and friends, shearing strong interpersonal skills and the ability to build meaningful connections.

# WILHELM SCHOEMAN

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## EDUCATION

**Cranfield University, Cranfield, United Kingdom** — **Expected September 2025**
*Master of Science in Advanced Motorsports Engineering*

**University of Pretoria, Pretoria, South Africa** — **December 2023**
*Bachelor of Engineering in Mechanical Engineering with distinction*

**Massachusetts Institute of Technology, Cambridge, MA, United States** — **December 2022**
*Exchange student in Aeronautics and Astronautics*

## PROFESSIONAL EXPERIENCE

**Vehicle Dynamics Group, Pretoria, South Africa** — **January 2024 - August 2024**
*Junior Research Officer*

- Preformed testing of modified Land Rover Defenders using Racelogic VBOX and dSpace MicroAutoBox III hardware
- Conducted consultation and tests of Mining vehicle collision management systems according to ISO21815:2 Standard; to verify the safety and validate the technology readiness levels of client systems
- Developed and Manufactured a second-generation remote controlled underground mining platform vehicle
- Rebuilt a broken 3D printer, adding network capabilities. At a 20% lower cost than purchasing a new machine
- CNC Machined a mounting rig for static tyre testing on large scale tyres such as truck and agricultural vehicle tyres

**MIT Space Resources Lab, Cambridge, MA** — **June 2022 - December 2022**
*Undergraduate Researcher*

- Designed and manufactured a second-generation guy wire stabilization arm sub-system to increase control by over 41% over boom deflection and reduce actuator count from 3 to 1
- Integrated design concept of the second-generation guy wire sub-system to a deployer payload supplied by NASA Testing as deployer prototype for potential 2026 Lunar Payload
- Co-authored a research paper published by the IEEE titled "Design Development of a Stable, Lightweight, Tall and Self-Deploying Lunar Tower", containing the design of the second-generation guy wire arms

**MIT Computer Science and Artificial Intelligence Laboratory, Cambridge, MA** — **January 2022 - May 2022**
*Undergraduate Researcher*

- Developed and tested the application of capacitance sensing from 3D printed mechanisms containing conductive filament with use of CAD software and specialised 3D printer filament
- Co-authored an ACM published research paper outlining the work

## LEADERSHIP EXPERIENCE

**TuksBaja Baja SAE Team, Pretoria, South Africa** — **January 2023 - December 2023**
*Composite suspension lead*

- Completed Final Year thesis on Composite material suspension for Baja vehicle using a 6-axis Wheel force transducer; reducing the suspension mass by 48%
- Performed vehicle dynamics tests such as constant radius, double lane change and bump tests to validate the ADAMS model of the car

**MIT Motorsports Formula Student Team, Cambridge, MA** — **January 2022 - December 2022**
*Aerodynamics Lead*

- Captained a team of 10 members in the development of an aerodynamic package with a 15% downforce to drag improvement
- Trained a team of 8 members in the manufacturing of carbon fibre components using resin infusion
- Welded the Steel Space frame chassis; passing all 2023 FSAE technical inspections for the first time in 2 years

## SKILLS & INTERESTS

- **CAD** Siemens NX, Solidworks, Fusion360, FreeCAD
- **FEA** LS-Dyna, Altair Hypermesh, Ansys Workbench (Mechanical & Fluent)
- **Coding** MATLAB, Python
- **Manufacturing** 3D Printing, CNC, Welding
- **Other** AVL Boost, Arduino IDE, MS Office

- **Golf 12 Handicap**
- **Triple jump**
- **Field Hockey**
- **Wakeboarding**
- **Embroidery**

# ARNAV SINGH

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*Cranfield University, UK*

## PERSONAL STATEMENT

A versatile and motivated postgraduate engineer with hands-on experience in **mechanical propulsion systems, system design, stress/thermal analysis and composite materials**. Currently working as a Race Mechanic and Data Engineer at Corinium Motorsports and a Track Marshal at Formula Fast, with active exposure to race operations and data analysis. Proven **leadership** in high-pressure, performance-driven environments through roles in international competitions including NASA HERC and Formula Student. Seeking for **powertrain performance and design** related roles within the motorsport industry, starting September 2025.

## KEY ACHIEVEMENTS

- Published and presented the paper titled, "**Vimana Aerotech and the development of a tail-sitter VTOL drone for research as well as commercial facilitation**" (*75th International Astronautical Congress, Milan, Italy, 2024*).
- Won the "**Project Review Award**" as **Team Captain** of IKR Gravity for the most innovative structural design and novel technological implementations (*NASA HERC 2023, Huntsville, Alabama, USA*).
- Received the "**Business Plan and Documentation Award**" and stood **3rd, 5th and 2nd at Formula Student events** as **Structure and Powertrain Head** of Inspired Karters Electric (*Formula Bharat 2021-23, Formula Imperial 2023*).

## EDUCATION

**MSc in Advanced Motorsport Engineering, Cranfield University, UK** **October 2024 - September 2025**

- **Relevant Modules:** Motorsport Powertrains, Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Motorsport Structural Analysis, Composite Structures for Motorsport, Motorsport Aerodynamics and CFD
- **Group Design Project:** Conceptual design of a Hydrogen ICE car for "LMH" in 2028 (Powertrain Subsystem)
- **Individual Thesis:** Thermal Management of the Powertrain for Dehumidification of Inlet Air
- **Extracurricular Project:** Van Diemen RF92 Formula Ford 1600 Powertrain Rebuild

**BEng in Chemical Engineering, Birla Institute of Tech. and Science Pilani, India** **November 2020 - July 2024**

- **Final Grade:** 81.5%
- **Relevant Modules:** CAD (A), CFD (A-), FEM (A-), Fluid Mechanics (A), Thermodynamics (A), Automotive Vehicles (B), Machines and Mechanisms (A-), Mechanics of Solids (A-), Heat Transfer (B)
- **Individual Thesis:** Background Oriented Schlieren Imaging of Thermal Convection – Designed, fabricated and validated the setup for a Schlieren Imaging Facility to investigate Shock-Boundary Layer Interactions of Supercritical Air Foils and Natural Convection of a hot plate through BOS Imaging techniques (A Grade)
- **Teaching Assistantship:** Served as the teaching assistant for the courses- Engineering Graphics (January 2022 - May 2022), Fluid Mechanics (September 2022 - December 2022) and CAD (January 2023 - May 2023)

## SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES

- **Volunteering:** BRDC VIP Escort for Formula 1 British GP 2025; Pit-operations consultant (F4 Indian Championship Race 2024 at Chennai); Pit-operations manager (MotoGP Indian GP 2023)
- **Software Skills:** AVL Cruise/Boost, Ricardo Wave, Altair Hyper-Works, Autodesk Fusion, SolidWorks, Siemens NX, CATIA, Altium, ANSYS, Altair Hyper-Works, Optistruct, MATLAB/Simulink and Microsoft Office Suite
- **Individual Interests:** SIM-Racing, E-sports, Automotive Photography, 3-D Printing, Leadership
- **Languages:** English (Fluent), Hindi (Fluent), Italian (Beginner), French (Beginner)

## PROFESSIONAL EXPERIENCE

**Corinium Motorsports, Cotswold, UK, Race Mechanic and Data Engineer** **January 2025 - Present**

Corinium Motorsport specialises in **competition and track day car preparation** for single seaters, sports cars and kit cars

- Conducted **full strip-downs** and **rebuilding of powertrains** along with **race day maintenance and data analysis** and preparation for **Radical SR3, PR6 and Pro-Sport**, ensuring optimal performance, and setup for each race.
- **Designed, prototyped, validated** the **custom mounting brackets** to **swap the 1L Aprilia RSV4 engine** of a Wolf Thunder GB08 to a **1.3L Suzuki Hayabusa engine** from a Radical Prosport.

**Formula Fast, Milton Keynes, UK, Track Marshall** **February 2025 - Present**

Formula Fast is **an indoor Go-Karting** facility which serves as a recreational space as well as hosting **BRKC** annually

- Facilitating **pre-session and post-session kart inspections** and performing **basic engine diagnostics** to maintain consistent kart performance and reliability of all karts.
- Managing **race control operations**, including flag signaling, incident response coordination, and real-time communication with drivers and team members to **ensure safety and adherence to racing regulations**.

**Vimana Aerotech, Pilani, India, CAD Designer and Assembly Engineer** **September 2023 - July 2024**

A drone-technology startup building **a VTOL Tail-sitter drone** for **commercial surveillance** and mapping

- Iterated over 50 models to devise a mass-surveillance drone which possesses a **90-minute flight time** on a **single-charge** due to its **topology-optimised VTOL tail-sitter design** and **high energy density** propulsion system.
- Implemented a **modified NACA25112** air foil standard on the drone and performed **CFD and failure-mode FEA/FEM studies** to adapt it to a low-speed ULM wingspan of 1300 mm and sustain impacts of up to 3500N.

**JSW Steel Pvt. Ltd., Vijaynagar, India, Summer Intern (R&D)** **May 2023 - July 2023**

JSW Steel is a steel-making company that produces and supplies products, primarily to the automotive industry

- Enhanced the **design of spray-boom ceramic nozzles**, **telescopic dispatch sprouts and the dispatch-truck vessel** for an enhanced **dispatching efficiency** of Iron Oxide from Acid Regeneration Plant by 200%.
- Created a **pneumatically activated tanker chamber** (300psi) which along with friction and consolidation rollers **improved the loading capacity** from 4 MT to 11.8 MT for a single cycle.

## STUDENT-TEAM EXPERIENCE

**Inspired Karters Gravity, Pilani, India, Team Captain and Mobility Head** **March 2021 - May 2024**

Birla Institute of Technology and Science Pilani's Team that participated in NASA Human Exploration Rover Challenge

- **Built a 3D printed wheel-rim design** using **generative AI**, for a topology-optimised three-wheeled beam-chassis ATV, which led to **45% mass reduction**, with each wheel spoke capable of **supporting a load of up to 300 Kgs**.
- Implemented an **FBW electronic steering system** which was powered by kinetic energy harvested from the wheels and **piezo-elements** incorporated in the shock-components; led to a **25% reduction on battery load**.

**Inspired Karters Electric, Pilani, India, Structure and Powertrain Head** **February 2021 - April 2024**

The Formula Student team of Birla Institute of Technology and Science Pilani

- Designed a **space frame chassis for a formula style vehicle** with a weight of 310 kg and conducted **FMEA tests and FEA Simulation** of essential components for **critical failure analysis** under catastrophic event conditions.
- **Developed the BMS**, ensuring optimal performance and safety for a 400V, 7.2 kWh lithium-ion battery pack, achieving an **improvement in energy and thermal gradient through advanced cell balancing**.

## ACADEMIC PROJECTS

**University of Stuttgart, Stuttgart, Germany** **January 2024 – October 2024**

**α: A New Overall Figure-of-Merit for Automotive Performance**

- Organised a database of 148 cars, with the aim of **establishing an overall figure-of-merit** for **comparison** of vehicles based on **automotive powertrain efficiency, power, and range performance**.
- Formulated a term "α" which ranges from 0-4 and aims to **combine a vehicle's maximum propulsive power** and in-principal acceleration capability, the average energy efficiency and the typical **total full-fuel/charged range**.

**University of Victoria, Victoria, Canada** **May 2023 - October 2023**

**Altair: Flight Path Prediction Modelling and Simulation**

- Established **computational stress and thermal models**, for a satellite which provides a **precise photometric reference calibration** using calibrated light sources over the atmosphere, in optical and microwave spectra.
- Built a **flight path prediction model** by deploying in-house generated software and helped in **CAD remodeling of the ALTAIR satellite** for efficient performance **and advanced sensor infusion** for payload-delivery.

**Birla Institute of Technology and Science Pilani, Pilani, India** **January 2023 - September 2023**

**Design and Composition of Vehicular Aluminium-Air Batteries**

- Created a preliminary design for an **Aluminum-Air battery for a 225.9 cc electric bike** (TVS Ronin) to increase its single charge **range to 1500+ kms**.
- Investigated **Al-alloy anodes**, **cathodic coatings** and solid electrolytes to draft a model of the optimal combination of materials in MATLAB for **97-99.5% efficient coulombic cycle** and **95% efficient charge/discharge** curves.

# Andrew Smith

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## PERSONAL STATEMENT

A postgraduate with engineering experience in both the top-tier motorsport and aerospace sectors. Professional experience is focused in the areas of high-performance engineering design and automotive engineering. Possesses a deep understanding of the intersection between critical accuracy and rapid output pace in engineering.

## KEY ACHIEVEMENTS

- Awarded Stamps Presidents Scholarship by Georgia Institute of Technology
- Led undergraduate Baja SAE team in the design, build, and test of the fastest vehicle in team history. Achieved multiple top 10 overall finishes as a lead.
- Designed and analyzed components for multiple race and championship winning vehicles within the FIA World Endurance Championship, NASCAR Cup Series, and IMSA SportsCar Championship
- Designed components for SpaceX's Starlink fleet, with examples now operating worldwide

## EDUCATION

**MSc in Advanced Motorsport Engineering: Cranfield University, Cranfield, UK (October 2024 – September 2025)**

- Modules: Motorsport Powertrains, Electronics and Data Acquisition, Vehicle Dynamics, Structural Analysis, Motorsport Aerodynamics, Computational Fluid Dynamics, Composite Structures, and Motorsport Business

**BSc (Highest Honors, 3.93 GPA) in Mechanical Engineering, minor in Aerospace Engineering, concentration in Automotive Engineering, Georgia Tech, Atlanta, Georgia, United States (August 2020 – May 2024)**

- Notable Modules: Machine Design, Fluid Mechanics, Thermodynamics, Heat Transfer, Acoustics, System Dynamics, Materials Science, Deformable Bodies, Engineering Statistics, Hybrid Vehicle Powertrains, Electrochemical Energy Storage
- Memberships: Georgia Tech Off-Road Baja SAE (*Chief Engineer, Chassis Lead, R&D Lead, Endurance Driver*), Boxing Club (*Team Manager, Boxer*), WREK 91.1 Radio (*News Show Host*)

## CAREER HISTORY

### TF Sport Ltd.: Data Engineer, WEC (January 2025 – Present)

TF Sport Ltd. competes in the World Endurance Championship LMGT3 Class with the #33 and #81 Corvette Z06 GT3.R

- Monitor key performance indicators during all on-track sessions for vehicle performance and vitals
- Generate pit stop reports and monitor competitor strategy (tyre, fuel, stint timing, etc.)
- Assist race/performance engineers with duties throughout all race weekends
- Develop vehicle performance optimization models using track data

**Burtin Racing: Race/Performance Engineer (June 2024 – August 2024)**
Burtin Racing competes in the Trans Am TA Class (top class)

- Developed full race setups using track data (MoTeC) and driver feedback
- Created data analyzation models for telemetry interpretation and vehicle monitoring
- Developed and communicated race strategies with drivers and team
- Assisted in vehicle build and repair, including full drivetrain rebuilds

**SpaceX: Starlink Engineering Intern (May 2023 – August 2023)**
SpaceX Starlink is a rapidly growing satellite internet provider with a focus on universal, low-cost internet accessibility

- Developed high-power ground antenna systems for SpaceX's rapidly expanding Starlink satellite program
- Designed and implemented mechanical solutions quickly for improving worldwide antenna reliability
- Fully redesigned the Starlink Gateway chassis for improved manufacturability and worldwide compliance

**Pratt Miller Engineering: Summer Design Intern (May 2022 – August 2022)**
Pratt Miller, a subsidiary of Oshkosh, specializes in the development of advanced ground mobility (both defense and civilian sectors) and competes in IMSA and the WEC as Corvette Racing

- Designed structural components for Corvette Racing
- Designed mechanical components for combat ground vehicles to fulfill future warfighter requirements and operate in interconnected battlefield environments
- Conducted in-person soldier workshops to determine needs and desires for future vehicle concepts
- Communicated with defense industry corporations for part-sourcing and presented future concepts to US Army officials

**ECR Engines: Engineering R&D Intern (May 2021 – August 2021)**
ECR Engines, a subsidiary of Richard Childress Racing, develops internal combustion engines for NASCAR (Cup and Xfinity series), IMSA, Trans Am, and other specialized performance efforts (Garage 56 and Singer Porsche)

- Designed, analyzed, and validated components for the development of NASCAR Cup (Next-Gen Camaro), NASCAR Xfinity, IMSA DPi (Cadillac DPi-V.R), and Trans-Am racing engines
- Developed instruments/procedures for cylinder head efficiency testing
- Created dynamic FE models for valvetrain component optimization

## SKILLS, INTERESTS, AND EXTRACURRICULAR ACTIVITIES

- **Languages:** Fluent English
- **Motorsport Data Acquisition:** MoTeC i2, Cosworth Pi, Bosch WinDarab
- **Engineering Software:** Siemens NX, Solidworks, Creo Parametric, ANSYS Mechanical and Fluent, Altair Hyperworks, LS Dyna, Matlab, Simulink, OptimumKinematics, Adams, AVL Boost, MS Office
- **Machining and Fabrication:** Manual Mill, Lathe, CNC Mill, Waterjet, 3D Printer (FDM and SLS), assorted manual tools
- **Geometric Dimensioning & Tolerancing**

# THOMAS SONVEAU

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## PERSONAL STATEMENT

With a deep passion for motorsports, extensive experience has been gained in optimising vehicle performance, race strategy, and mechanical diagnostics. Skilled in working under high-pressure conditions, delivering competitive results alongside diverse teams. At Tuthill Porsche, contributed to the GT ONE project, 2.0L Cup Championship win and East African Safari Rally Classic Win, refining expertise in precision engineering, collaboration, and innovation. Known for adapting quickly to new challenges and implementing effective solutions driving performance

## KEY ACHIEVEMENTS

**Tuthill Porsche,** Wardington, UK February 2023 - Present

**Data & Race Engineer**

- Engineered the winning car for Le Mans Classic 2023 Grid 4
- Engineered the Peter Auto 2.0L Cup championship overall and gentlemen winning cars, winning every round of the season
- Engineered the East African Safari Rally Classic winner, following Graham Moore throughout the event

**Helmo Gramme,** Liege, Belgium September 2018 - June 2023

**Engineering Student**

- Design and implementation of the drivetrain of 2 robots participating in Eurobot contest 2022 (5th Place)
- Design and aerodynamic study of the blades for a portable wind turbine (1st place in industry)

## EDUCATION

**MSc,** Cranfield University, Cranfield, UK October 2024 - September 2025

Advanced Motorsport Engineering

**Master's degree in Industrial Engineering major in Mechanics,** Helmo Gramme, Liege Belgium September 2021 - December 2023

**Helmo Gramme, Liege**

Master's degree in Industrial Engineering - Major in Mechanics
Graduated with great distinction

**Qualification,** MIA School of Race Engineering - Part 1 & 2, Silverstone, UK April 2023 - April 2023

Certificate

## CAREER HISTORY

**Tuthill Porsche,** Banbury, UK July 2023 - Present
Automotive Manufacturer / Race Team

**R&D Engineer**

- Managing the design and manufacture of the topologically optimised suspension of the GT ONE, decisions on key elements and link between Suspension engineer and design team. Design of the front and rear anti-roll bars
- Managing fabrication of the shell and general construction of the GT ONE. Design of various parts fabricated parts, reverse engineering and jigging solutions for both steel and carbon fabrication
- Developing an engine upgrade for the 2.0L cup cars, achieving better responsiveness at low to mid range, a suspension upgrade to reduce rolling and improving entry oversteer on 2.0L Cup cars. Design of an exhaust and trumpets, Damper and bump rubber
- Collaborating to the 2023 East African Safari Classic Rally 1st and 3rd focusing on tyre performance and wear management in addition to looking after cars during the event
- Engineering of the 2.0L cup cars, winning the 2023 Overall, Gentlemen and Gentlemen-Elite championships, claiming victories in every event of 2023. Contributing to many class victories and podiums during the 2024 season. Data analysis and driver performance

**Cadillac Hertz Team Jota,**, Tunbridge Wells, UK — February 2025 - Present
WEC Hypercar 2025 season

**Remote Race support**
- Monitoring competitor tyre usage
- Monitoring competitor energy usage
- Assisting in the preparation and analysis of competitor performance and strategy throughout the race

**Power Maxed Racing,** Bidford-on-Avon, UK — August 2024 - Present
BTCC Race Team

**Data Engineer**
- Teaming up in the Donington Park GP Rounds 22, 23 and 24 of the 2024 BTCC Championship as a data engineer working on car 40 and 88
- Contributing on interpreting the data from the ICE, hybrid powertrain and overall health of the car. Achieving a P3 in qualifying and P3 in the 3rd race of the day

**European Sport Communication,** Luxembourg — January 2022 - Present
Events

**Operational Partner**
- Building of the Village VIP on the Ardeca Ypres Rally 2022, helped constructions and logistics of the structure on the border of the special stage
- Offering operational support on the Acropiolis WRC Rally for Toyota Gazoo Racing VIP clients. Responsible of the UK media group
- Assuring the operational support on the 2024 24H of Le Mans for Toyota Gazoo Racing VIP clients. Responsible for the UK media group

**Tuthill Porsche,** Banbury, UK — February 2023 - June 2023
Automotive Manufacturer / Race Team

**Engineering Intern**
- Contributed to the improvement of the 911K suspension system and 993 driveability. Master's thesis written on the subject
- Created various parts for the 911K build, reverse-engineering of different fabricated parts, problem-solving
- 2.0L cup cars at Spa and Le Mans classic, claiming victories in both events. Data analysis and driver performance

**Overdrive Racing,** Villers-le-Bouillet, Belgium — January 2020 - December 2020
Rally-Raid Race Team

**Engineering Intern**
- Adjusted the gearbox ratios to comply with the new FIA regulations limiting the speeds at 180 km/h
- Collaborated in the preparation of the 2021 Dakar for the RedBull OT3, Toyota Hilux and BAIC Orv. Assembled suspension sub-assemblies and designed sheet metal parts. Prepared 8 cars for that year's event
- Cooperated with the engineers on the day-to-day tasks, design and reverse-engineering. Administrative and inventory management. Modified parts such as front sump guards, exhaust brackets, dash brackets and more

## MSC ACADEMIC PROJECTS

**Helmo Gramme,** Liege Belgium — September 2022 - January 2023

**Topological Optimisation of a hybrid kart chassis**
- Optimised the diameters and thickness of ta 42 element chassis from a FIA approved crash scenario by using a self-made Matlab script of a multi-objective optimisation, choosing the stiffest and lightest chassis possible

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

3D design (Solidworks, fusion 360, Onshape) & 3D printing
Robotics (STM32/Raspberry/PIC16/Arduino) & Programming (C/C#/Python/Javascript/HTML/Matlab)
Data Analysis (Motec, Circuit tools, Pi Tools, RaceWatch, Atlas)
Football, Bouldering, Padel
French (Native) - English (IELTS 8.5)

# Adhityan Sridharan

Cranfield, UK | Ringoes, NJ, USA | adhityan.sridharan@gmail.com | 07300 521 948 | in

## Personal Statement

A highly motivated young engineer with experience in automotive and aerospace vehicle design. Has an affinity for fluid flows and heat transfer. Believes in the potential of computational techniques to advance engineering workflows and outcomes. Carries a meticulous, informed, and orderly approach to problem solving. Eligible to work in the UK as a graduate, and in the USA without sponsorship.

## Education

**Cranfield University**, MSc in Advanced Motorsport Engineering — Sept 2024 – Sept 2025

- **Expected Grade**: 1:1 (First Class Honours)
- **Relevant Coursework:** Motorsport Aerodynamics, CFD for Motorsport, Motorsport Vehicle Dynamics, Motorsport Electronics and Data Acquisition

**BITS Pilani**, B.E. (Hons) in Mechanical Engineering — Sept 2024 – Sept 2025

- **CGPA**: 8.01/10 (Equivalent to First Class Honours)
- **Relevant Coursework:** Fluid Mechanics, Gas Dynamics, Computational Fluid Dynamics, Computer-Aided Design

## Experience

**Research Assistant**, Princeton University - Princeton, NJ — June 2024 - August 2024

- Explored PCB designs on Autodesk Eagle, for weight reduction of a micro-UAV employed in PIV-based atmospheric pollutant mapping.

**Team Captain and Aerodynamics Head**, Inspired Karters Electric FSAE — December 2020 - July 2023

- Developed front and rear wings for the team's new electric racer using Ansys Fluent, while supervising the development of a new diffuser, resulting in a simulated laptime gain of 1.4s around an endurance course.
- Redesigned battery thermal management systems (BTMS), accummulator casings, and cell racks, to ensure safe temperature operation and to prevent cell swelling.
- Spearheaded the team's award-winning return to competition for the first time in 4 years.

**Summer Research Intern**, CSIR - National Aerospace Laboratories — May 2022 - July 2022

- Redesigned supersonic venturi tunnels on CATIA V5 and Ansys Fluent to alleviate normal-shock induced pressure losses by 26.15%, for application in a commercial light passenger aircraft at high altitudes.

## Publications

**Thermal Effects of Vortex Generators on Transonic Aerodynamic Surfaces** — May 2024

***Adhityan Sridharan***, Pratyush Padmanabhan, Chennu Ranganaykulu

10.1109/AERO58975.2024.10521013

Analysed the potential of various vortex generators computationally to quantify temperature distributions across transonic aircraft wing surfaces.

## Projects

**Graduate Thesis - Ground Effect Analysis of Racing Motorcycles** — 2025 - Present

- Conducting CFD studies of various motorcycle fairing geometries on OpenFOAM to characterize lift, drag, and centre of pressure variations during cambered cornering conditions.
- Quantifying the effect of aerodynamic forces due to ground effect on vehicle stability and lap time using multibody simulation tools.

**Undergraduate Thesis - Schlieren and BOS Imaging Systems** — 2023-2024

- Designed and manufactured an affordable Schlieren Flow Visualisation setup using telescope-grade optics, for a

new compressible flows laboratory.

- Deployed a modified Background Oriented Schlieren program on MATLAB to map temperature gradients in natural convection flows.

**Battery Thermal Management through Organic Phase Change Materials** 2023

- Conducted a through computational study of battery wall temperature regulation due to organic Phase Change Materials on steady-state 18650 Lithium Ferro Phosphate electric vehicle cells in extreme Indian conditions using Ansys Fluent, observing a wall temperature reduction of 25K.
- Built an experimental test rig using lab equipment to qualitatively verify CFD results, and to facilitate future PCM-based experiments.

**Subsonic Aerodynamic Characteristics of Forward Swept Aircraft Wings** 2024

- Compared and contrasted the lift and drag characteristics of a SC(2)-0714 Supercritical Airfoil-based wing in forward and backward swept cases, for improved stall characteristics in transonic commercial aircraft.

## Motorsport Endeavours

**Trackside Official**, Indian Racing Festival September 2024

- Worked as a Trackside Official at the inaugural Indian Racing Festival Street Race in Chennai, ensuring event adherance to FIA and FMSCI protocols.

**Sim Racing**, Formula Bharat Rev-It

- Participated in the inaugural Formula Bharat Rev-It sim racing event, competing in circuit, hillclimb, and drag events.

## Volunteering

**Teaching and Research Assistant**, BITS Pilani January 2022 - March 2023

- Responsible for the development of CFD Learning modules on MATLAB for Graduate-Level Coursework.
- Guided 30+ students through numerical problems in Gas Dynamics, through lectures and assignments.
- Designed choking venturis and shock tubes for a new compressible flows laboratory.

## External Coursework

**CATIA V5: Surfacing** by LinkedIn Learning April 2025 -
To improve surfacing skills for complex aerodynamic design tasks.

**Data Analysis Specialization with MATLAB** by MathWorks February 2025 -
To streamline workflows with large data-handling requirements.

**Design of Fixed-Wing Unmanned Aerial Vehicles** by IIT Kanpur July 2021
To understand the mechanisms of lift, drag, and moment generation through wings (airfoil theory).

**Modelling and Desihn with Fusion 360** by Autodesk December 2020
Acclimatising to the basics of 3D modelling with CAD.

## Skills and Interests

**Languages Known:** English (Native Proficiency), Tamil (Native Proficiency), Hindi (Working Proficiency)

**Coding:** MATLAB, Python, C++, C, Arduino

**Technologies:** Ansys Fluent, OpenFOAM, CATIA V5, AutoCAD, Fusion 360, Eagle, AVL Boost, AVL Cruze, Cosworth Pi, MoTeC, Hypermesh, PreProMax, Gmsh, OptimumLap

**Other Skills:** Excel, LaTeX, Word, Powerpoint, Photoshop, Lightroom, Premeire Pro, Aerodynamics, CFD, FEA, Wind Tunnel Testing, Vehicle Engineering

**Interests and Hobbies:** Restoring Vintage Mechanical Wristwatches, Street Photography and Photowalks, Riding Motorcycles, Road Cycling and Bicycle Building

# Robert-Constantin Stanculescu

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Cranfield University, United Kingdom

## Personal Statement

A proactive and analytical Motorsport Mechatronics student at Cranfield University with a bachelor's degree in Mechatronics and Robotics. Former experience in Finite Element Analysis from a 6-month internship at Tecosim, solving primarily modal and structural analysis on vehicle subassemblies and providing necessary design improvements. Gained R&D experience in Unmanned Aerial Vehicles (UAVs) department of Comoti Research Institute with a focus on sensors and sensory systems calibration, electrical systems, hardware assembly, computer aided design and Enhanced communication and leadership skills in industry and various university competitions and projects.

## Key Achievements

- Awarded academic merit scholarship throughout bachelor's degree and graduated with a GPA of 9.4/10. (Polytechnic University of Bucharest, 2020-2024)
- Secured £1800 grant to build a robot prototype for guiding hearing and visually impaired individuals, working collaboratively in a team of four. (Techallenge by Honeywell, 2023)
- Awarded 3rd place in a 3-day Innovation Bootcamp, with a business plan for a working prototype of an atomic force microscope. (Laser Valley Innovation Bootcamp by Romanian Ministry of Research, 2023)
- Awarded in the Student Scientific Communications Conference with a presentation focusing on ground effect in Formula 1 cars. (Polytechnic University of Bucharest, 2021)

## Education

**MSc in Advanced Motorsport Mechatronics** **October 2024 – September 2025**
**Cranfield University, Cranfield, United Kingdom**

**Modules:** Motorsport Electronics and Data Acquisition, Advanced Control and Optimisation, Embedded Vehicle Control Systems, Vehicle Control Applications, Mechatronics Modelling for Vehicle Systems, Motorsport Vehicle Dynamics, Motorsport Powertrains, Business of Motorsport.
**Practical Applications:** Developed a PID controller for a drag reduction system using a physical motor and flap, used system identification to better understand how to control the nonlinear behaviour. Installed, calibrated and tested a wide range of sensors on a car used for future tests during the course, gained important knowledge regarding data acquisition and data transfer in the vehicle. Tested the suspension system of a rally race car using four-poster vibration test to gather ride characteristics for different suspension settings at different frequencies.
**Academic Reports:** Advanced Control and Optimisation - Implemented several MIMO control algorithms for vehicle dynamics using MATLAB/Simulink, such as LQR, LQG and H-Infinity controllers. Mechatronics Modelling for Vehicle Systems – Created a model for an active aerodynamic rear wing. Motorsport Powertrains - Modified and tuned different engines using AVL Boost, including a Formula 1 engine based on 2026 regulations.

**BSc in Mechatronics and Robotics** **September 2020 – July 2024**
**Polytechnic University of Bucharest, Bucharest, Romania**

**Modules:** Acquisition Systems and Interfaces, Sensors and Sensory Systems, Mechatronic Systems, Microprocessors, Microcontrollers, Robotics, Artificial Intelligence, Pneumatic and Hydraulic Automation, Manufacturing Technologies, Electrical engineering, Mechanical Engineering.
**Thesis:** Designed, built and tested a Mobile Platform capable of carrying up to 400 kilograms. Full 3D Model designed using AutoCAD Inventor, structural and modal FEA simulation to determine frequency modes and validate the proposed carrying capacity without plastic deformation. Two motor design using BLDC motors powered using 4 VRLA 12V batteries. Designed electrical configuration using KiCad. Designed a control algorithm to allow remote robot control.
**Academic Reports:** Designed the technical specifications for a three-step gear reducer including the final CAD and technical drawings. Designed a robot gripper with final CAD.

## Career History

**Engineering Intern** **February 2024 – August 2024**
**Tecosim, Bucharest, Romania**

International automotive provider of computer-aided design and engineering, finite element analysis.

- Completed one month training on structure meshing using industry standard ANSA and Ansys pre-processor.
- Proposed changes for several components to change the natural frequency of different vehicle subassemblies after detailed modal analysis using Nastran solver to achieve performance targets.

- Enhanced structural integrity of various vehicle subassemblies by proposing different changes to avoid plastic deformation after detailed structural analysis using OptiStruct solver.
- Produced high quality, detailed reports using animations created with META post-processor to highlight the impact of the proposed changes.
- Expanded field knowledge with two personal projects over the course of the internship.

**Engineering Intern** **June 2023 – September 2023**
**Comoti, Bucharest, Romania**

Romanian Research and development Institute for Gas Turbines. Part of the newly formed Unmanned Aerial Vehicles Department.

- Created electrical looms for various drones, prototypes and test rigs, by soldering wires and electric connectors, and mounting them according to electrical schematics, contributing to multiple successful initial tests.
- Mounted, tested and calibrated multiple sensors, electric motors and motor drivers, using Raspberry Pi computers with Ubuntu operating system to facilitate easy software and hardware modifications during testing.
- Developed a functioning PID speed controller in Python programming language to follow set parameters set by the department.
- Assembled structure components of three different drones of various types: fixed-wing, quadcopter and coaxial drones, by following schematics to allow for further testing and modifications.
- Constructed a test bench, from aluminium extrusions, for a micro turbojet engine by following various technical drawings and soldering the electrical circuit, to allow for further construction.
- Designed a gimbal system for a 30x optical zoom thermal vision camera using SolidWorks, to be 3D printed and tested for active image stabilisation during flight.

## Projects

**Group Design Project: Design of a Hydrogen Hybrid LeMans Hypercar – 2025**
Used MATLAB Simulink to develop an Equivalent circuit battery model, based on real battery test data and MGU-K model using electric motor data. Brake by Wire system thermal and hydraulic models. Implemented a control algorithm for blending friction braking and electric motor braking. Validated the hydraulic model and control algorithm using hardware in the loop testing on an ABS pump using dSpace environment.

**Axsim Formula 1 Simulator – 2025**
Calibration and test of the hydraulic brake system. Organised and helped label the electrical wiring. Tested the electric motors for different axes of seat movement

**TIE-M Competition by Continental – 2024**
Developed a full structural report on a PCB case in two weeks' time. Determined resonant frequencies of the assembly with modal analysis. Proposed ways to improve the design to limit some of the faults observed.

**Hackathon by Department of Mechanical Engineering and Mechatronics – 2023 & 2024**
Organised career fair, helped with calling companies and logistics. Built an Arduino-based robot with smartphone control for the 2023 edition. Assembled a line-following robot for the 2023 edition.

## Volunteering, Skills and Interests

**Student Association Volunteer – Youth in Action Student Association 2023 & 2024:** Organised the annual careers fair by contacting companies to arrange participation and assisting with logistics and promotional stand setup, resulting in a successful event attended by hundreds of high school and university students. Raised funds for a charitable cause by organising the Winter Holidays Fair and managing a stand selling homemade desserts and small gifts, generating over £400 for the initiative.

**Untold Music Festival Volunteer – 2022 & 2023:** Facilitated communication between multiple international artists and festival organisers, managing travel logistics and ensuring artists followed the schedule set by stage managers, while maintaining continuity of the stage performance by modifying the schedule in the event of unavoidable delays.

**Languages:** Native Romanian, Fluent English (7.5 score in IELTS), Intermediate German (Courses over 14 years)
**Embedded Systems:** Arduino, Raspberry PI, Proteus, OrCAD, KiCad, TCP, CAN bus and Networking.
**Data Acquisition:** MoTeC, Pi Toolbox, McLaren ATLAS.
**Engineering Software and Tools:** MATLAB, Simulink, NI LabVIEW, Python, C++, SolidWorks, Fusion 360, AutoCAD, Autodesk Inventor, ANSA, META, Ansys, GitHub, Visual Studio, FluidSIM, Microsoft Office Suite – Excel, Word, PowerPoint, Outlook, Teams, Project.
**Interests:** Member of the Table Tennis Association**,** Piano studies, Reading books on personal development.

**LinkedIn Profile:** linkedin.com/in/robert-constantin-stanculescu

# PRANAV SUDHEER

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## PERSONAL STATEMENT

Currently pursuing a MS in Advanced Motorsports Engineering with a focus on technical and business aspects of the field. Experience includes leading a Formula Student team as Head of Structures, responsible for designing and analysing the chassis and led a team in developing a comprehensive business plan, combining technical insights with strategic planning to secure sponsorship and funding. Practical and technical experience enable contribution to advanced motorsports solutions. Skilled in collaboration and communication to achieve project goals.

## EDUCATION

**MSc, Advanced Motorsports Engineering,** Cranfield University, Cranfield, UK October 2024 - October 2025

- Modules: Powertrain Design, Electronics and Data Acquisition, Vehicle Dynamics, Business of Motorsport, Aerodynamics, Structural Analysis, Computational Fluid Dynamics, Composite Structures

**BEng, Automotive Engineering,** Manipal Institute of Technology, Manipal, IND July 2020 - July 2024

- Modules: Automotive Engines, Material Sciences and Metallurgy, Strength of Materials, Transmission Systems, Automotive Chassis and Suspension, Design of Machine Elements, Finite Element Method, Theory of Vibrations, Vehicle Aerodynamics, Composite Structures
- Thesis Project: Modelling and Simulation of Natural Fibre Reinforced Composites for Formula Student Car Seat

## WORK EXPERIENCE

**Research Intern,** Manipal Institute of Technology, Manipal, IND January 2024 - June 2024

- Evaluated the potential of three natural fibres and two natural resins over 6 models in comparison to a Carbon Fibre and Epoxy design for a Formula Student Car seat as per strength requirements of the Formula Student Rules and Regulations.
- Examined the structural integrity and stiffness of the natural fibre composite seat using Ansys Composite Pre-Post (ACP).
- Attained between 9% and 18% reduction in design weight over the six simulations while balancing occupant safety within simulated loading conditions.

**Structures Subsystem Head,** Formula Manipal, Manipal, IND August 2022 - September 2023

- Led the preparation and oversaw the car's technical inspections and documentation of design reports, ensuring compliance with performance, and design standards outlined in the Formula Student regulations, during three competitions.
- Designed and fabricated a Carbon Fibre Reinforced Plastic steering wheel and seat. Responsible for packaging of components in the cockpit by coordinating with three other subsystems in the team.
- Coordinated with other leads and developed detailed budget documentation for Structures Subsystem for the 2022-23 season, aligning it with the goals of both the subsystem and the team.

**Business Plan Presentation Lead,** Formula Manipal, Manipal, IND August 2022 - September 2023

- Prepared and presented a detailed business case and valuation model, analysing and modelling opportunities for revenue growth over a 5-year period.
- Established the operational framework and conducted a structured analysis of five competitors based on the business model to identify market opportunities.

**Structures Subsystem Team Member,** Formula Manipal, Manipal, IND August 2021 - August 2022

- Fabricated and validated a tubular spaceframe chassis and obtained a 13% improvement in weight in comparison to the previous design for the 2022 season of Formula Student.
- Conducted ergonomic analysis to finalize the driver positions for the 4 drivers of the team optimizing parameters such as seat angle, steering wheel position, pedal position, and drivers' line of sight.
- Developed a mock-up jig integrated with the chassis to determine up to eight ergonomic reference dimensions and finalize placement of components under chassis constraints to enhance the functionality of cockpit components.

## BENG ACADEMIC PROJECTS

- Jonathan Monteiro, Suhas Yeshwant Nayak, Kevin Amith Mathias, Nilesh Patel, Abhiyan Singh, Ajinkya Chaudari, Pranav Sudheer, "Effect of fibre orientation and reinforcements on the performance of composite pressure vessel using finite element analysis.", Cogent Engineering, 2024.
- Arjun Santhosh and Pranav Sudheer, 2024, An Integrated Chassis-Ergonomic Jig Mock-up Design, Intellectual Property India, 202441032235, filed April 23, 2024, published June 21, 2024. Patent Pending.

## SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES

**Technical**

- Proficient in the use of Autodesk Fusion 360, AutoCAD, CATIA, Ansys Mechanical, Altair Hypermesh and MATLAB.
- Proficient in the use of Microsoft Office software.
- Completed the following courses with certification:
  1. 3D Model Creation with Autodesk Fusion 360 (Coursera).
  2. Autodesk Fusion 360 Integrated CAD/CAM/CAE (Coursera).
  3. Intro to Digital Manufacturing with Autodesk Fusion 360 (Coursera).
  4. Startup Valuation Methods (Coursera).

**Languages**

- English, Hindi, Malayalam, and Kannada.

**Interests**

- Achieved Sandan (Black-3) in GI TOKU KAI KARATE.
- Engaged in the pursuit of Western dance and Carnatic classical music as part of my personal interests and skills development.

# LASZLO TOLNAI

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Cranfield University

## PERSONAL STATEMENT

A competitive, forward thinking and solution-oriented person who loves working with and learning about highly advanced technology and engineering. 3 years of experience with designing and manufacturing high performance Formula Student cars on a limited budget, has resulted in highly developed evaluation and trade-off analysis skills, as well as manufacturing experience and the importance of design to manufacture. Working in the aerodynamics department of the UWE Formula Student team has given a deeper understanding of the importance of aerodynamic design and simulation workflow as well as the importance of validation of simulations. As Head of Design, developing strong communication, planning and leadership skills were crucial for operating a strong and talented team.

## KEY ACHIEVEMENTS

- Led the design of the UWEFS-11 Formula Student car, UK's first hybrid electric Formula Student car, and kept the team's top 10 finishing position at FSUK for the 6th year running. (UWE Formula Student, 2023/24)
- Reworked the CFD simulation workflow at the UWE Formula Student team and enabled an increase in the aerodynamic development speed by more than 30%, whilst maintaining the simulation accuracy. Also introduced CFD simulations at yaw angles into the team (UWE Formula Student, 2022/23)
- Made the Dean’s List for excellent academic performance for achieving a grade greater than 70% in Aerospace Engineering (UWE Bristol, 2020/21)

## EDUCATION

**MSc Motorsport Engineering, Cranfield University, Cranfield, UK** **October 2024 - September 2025**

- **Modules:**
  - Motorsport Aerodynamics, Computational Fluid Dynamics for Motorsport, Composite Structures for Motorsport, Motorsport Electronics & Data Acquisition, Motorsport Vehicle Dynamics, Motorsport Structural Analysis, Motorsport Powertrains, The Business of Motorsport.
- **Group Projects:**
  - Group Design Project of a Conceptual Design of a Hydrogen ICE car for LMH in 2028. Goal was to design a Hypercar to modified LMH regulations to allow for Hydrogen ICE as the main powertrain. Another emphasis was put on sustainable materials such, as flax and cellulose for impact structures. Proficiency with CATIA V5 surfacing was developed throughout daily use for aerodynamic development during this 2-month project.

**MEng Aerospace Engineering with Merit, UWE Bristol, United Kingdom** **September 2020 - August 2024**

- **Modules:**
  - Fundamental & Further Aerodynamics, Advanced Manufacturing, Structural Mechanics, Principles of Lean Engineering, Engineering Practice, Spaceflight, Space Engineering, Space Systems Design, Fundamental & Further Aero-Propulsion, Aerospace Systems Design.
- **Group Projects:**
  - Aerospace Group Design Project at bachelor's level in collaboration with Airbus. Goal was to produce a conceptual design of a short-range regional airliner for intra-European routes, primarily optimised for minimum environmental impact.
  - Master's Group Capstone Project on a Formula Student style car business. Goal was to design a cost effective, electric Formula Student style car to a client's specifications. Additionally, the team had to work as a start-up business with long term plans for the delivery and financing of the 500 vehicles to the client.
- **Individual Thesis:**
  - Vortex Flow Visualisation and Their Simulation. Project aim was to investigate vortex structures and generation on three different delta wing geometries. A laser sheet visualisation tool was developed for this project.
- Awarded the "Dean's Award for Academic Excellence 2020/21".

## CAREER HISTORY

**UWE Formula Student, Bristol, UK, Head of Design** **July 2023 - August 2024**

Formula Student team since 2014, entering in CV class at FSUK and across Europe. The team provides an opportunity to work in a motorsport environment whilst educating students and preparing them for their career. The team consistently finish top 10 at every competition it enters.

- Managed the technical side of the team as the chief engineer.
- Drove the development and design of the UWEFS-11 Formula Student car, which achieved a top 10 finish at Formula Student UK.
- Investigated the feasibility and headed the design of an electric drive system for implementation into the current combustion powertrain, pioneering hybridisation of Formula Student in the UK.
- Negotiated new technical partnerships, bringing onboard new sponsors.
- Encouraged the team to explore new designs and manufacturing methods to increase performance.

**UWE Formula Student, Bristol, UK, Aerodynamics & CFD Engineer** **September 2021 - July 2023**

The aerodynamics department is responsible for development, simulation, manufacturing and validation of the aerodynamics package within the team. The team prides itself with having one of the highest performing Formula Student aerodynamics in the UK.

- Designed the sidepods of the UWEFS-X car. By closely working together with the powertrain department, cooling performance was improved by 33% from the previous year.
- Reworked the CFD simulation workflow to allow for a 30% improvement in development speed, whilst introducing further simulation modes such as yaw simulations for a better understanding of aerodynamic performance whilst cornering.
- Conducted wind tunnel testing of both 2022 and 2023 cars to understand the accuracy of the simulations and improve them by correlating results.
- Manufactured composite aerodynamic parts, including the team's first female mould for the new sidepods.
- Carried out frequent training of the future aerodynamicists for the team, teaching the team's design, simulation, validation and manufacturing principles and procedures.

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

- **Languages:** Norwegian and Hungarian languages as mother tongues. Knowledge of English at C1 level with C2 in speaking and listening (Cambridge Advanced English).
- **IT Skills:** Confident user of SolidWorks and CATIA V5 for surfacing, well familiar with MATLAB, constantly learning. Good experience with Life Racing custom ECU software as well as experience with ATLAS and Motec, especially for track data analysis. Experienced user of the ANSYS product family, especially the CFD software Fluent.
- **Sports:** Used to be a competitive swimmer in Norway for 5 years with participation in international competitions such as Bergen Swim Festival and The North Sea Swim Meet.

# ANDRÉ SANDE DE SÁ TOPA

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Baroness Young Hall, Block 3, Room 844, The Drive, MK43 0SR

## PERSONAL STATEMENT

Motivated and driven MSc in Advanced Motorsport Mechatronics student with a BEng in Mechanical Engineering, with an interest in vehicle dynamics and control systems engineering. One year of process engineering experience in the top global consumer goods manufacturing company. Proficient in conducting root cause analysis and solving problems. Interpersonal skills to work within a diverse team. Strong ability to construct mechanical and electronic systems simulation, using MATLAB and Simulink.

## KEY ACHIEVEMENTS

- Led the design and development of a cost-effective trolleybus for Coventry, aligning with UK mobility goals for 2030. Delivered an innovative energy contact system prototype with an improved powertrain model, which achieved a 57% weight reduction in the system's battery pack compared to existing alternatives (Coventry University, 2024).
- Designed a state-of-the-art pressure vessel to test materials for hydrogen exposure in the aerospace industry, meeting the industrial standard BS EN 13455. Conducted CFD analysis to ensure safety and structural integrity under operational conditions of the equipment (Coventry University, 2024).
- Awarded the 'Student of the Year - High School' Award by the Rotary Club - Vila Nova de Gaia (Colégio Internato dos Carvalhos, 2020).

## EDUCATION

**MSc in Advanced Motorsport Mechatronics, Cranfield University, Cranfield, UK** **October 2024 - September 2025**

- **Modules:** Motorsport Powertrains, Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, The Business of Motorsport, Vehicle Control Applications, Mechatronics Modelling for Vehicle Systems, Advanced Control and Optimisation, Embedded Vehicle Control Systems.
- **Projects:**
  - Motorsport Powertrains: optimisation and simulation of F1 2026 Powertrain using AVL Boost.
  - Motorsport Electronics and Data Acquisition: data analysis – Formula Ford vehicle performance using PiToolbox and MATLAB to evaluate driver inputs and lap optimisation opportunities.
  - Advanced Control and Optimisation: design and simulation of a multivariable feedback controller for an automated steering system using MATLAB and Simulink.
- **AXSIM Simulator:** rebuilding and recalibration of a driver-in-the-loop (DIL) simulator featuring Dbox actuators and a yaw motion system used for driver training, race engineering, performance analysis and real-time telemetry.

**BEng in Mechanical Engineering, Coventry University, Coventry, UK** **September 2020 - May 2024**

- **Grade:** First Class (Honours).
- **Key Modules:** Electrical Science (100%), Mechanical Science (80%), Engineering Design (73%), Analytical Modelling (84%), Solid Mechanics and Dynamics (76%), Thermofluids Mechanics (76%), Instrumentation and Control (84%), Computational Thermofluids (78%), Control Systems Engineering (62%), Stress and Dynamic Analysis (73%), Mechanical Product Innovation (77%), Individual Project (68%).
- **Thesis:** Designing and Manufacturing of a Pressure Vessel to Test Materials for Hydrogen Exposure

Designed a pressure vessel in CATIA V5, applying thin-wall theory and BS EN 13455 standards, achieving a safety factor of 2 under Tresca's criterion. Conducted CFD analysis in ANSYS Static Structural to evaluate stress, strain, and displacement under 2.5 MPa, validating results through a mesh independence study.an internal static pressure of 2.5 MPa, performing a mesh independence study to ensure the reliability and accuracy of the results.

## CAREER HISTORY

**Procter & Gamble UK, London, Process Engineer** **July 2022 - June 2023**

A leading multinational consumer goods manufacturing company, renowned for its iconic brands and specialising in a wide range of products across categories such as personal care, home care, healthcare, and baby care.

- Executed loss elimination cycles across packing unit operation that produced 240 units per minute by using Integrated Work System tools, resulting in an 8% process reliability gain against a target of 5%.
- Managed resourcing, implementation and commissioning of an inspection vision system by working as project and start-up leader, mitigating a quality risk of £25 000.00.
- Enhanced the base condition of packing line machines by developing and implementing operational and maintenance standards on production line, reducing process reliability downtime by 3%.
- Developed and implemented maintenance strategies by collaborating with the maintenance team to improve scheduling and to focus on breakdown elimination and diagnosis of premature failure of components, reducing process reliability losses by 2% due to repeat breakdown.

**COTESI, Porto, Electrical Maintenance Technician** **September 2019 - March 2020**

A global company that serves the agricultural, marine and industrial sectors and specialises in the production of agrarian twine, nets and ropes made from synthetic and natural materials, specialising in baler twine manufacturing.

- Conducted corrective and preventive electrical maintenance in plastic extrusion and packing unit operations, integrating a team of 6 technicians by responding promptly to breakdowns and restoring the operation of the production lines, reducing manufacturing interruptions to minimise downtime.
- Improved operational safety in 8 plastic extrusion lines by installing safety relays, door switches, and light curtains, reducing operational risk, preventing workplace injuries, and preserving the integrity of the machine safety circuit.

## BENG ACADEMIC PROJECTS

**Coventry University, Coventry, Project Manager** **January 2024 - May 2024**
**Design and Development of a Trolleybus for Coventry**

- Led a group of four people by applying planning and project management techniques – Gantt Chart, Project Charter and Hoshin Planning – to ensure consistent project evaluation and completion of 100% of the tasks within the stipulated timelines.
- Designed an efficient and cost-effective public transport system for Coventry by evaluating various transportation methods and conducting market research, delivering a solution aligned with UK government sustainability targets for 2030.
- Designed an energy contact system – pantograph – in SolidWorks for prototyping and carbon fiber 3D printing, creating precise 2D technical drawings with GD&T per BS8888 standards. Developed a comprehensive bill of materials for assembly and product costing, ensuring accurate resource planning and cost estimation.
- Developed a powertrain model in Simulink to design a battery pack that was 57% lighter than existing bus alternatives, simulating trolley bus performance under operational conditions and validating the model through comparison with real-world data.

## SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES

- **Languages:** English (Fluent - C1), Spanish (Intermediate – B1), Portuguese (Native)
- **Driver License:** EU Class A1, B License
- **Engineering Software:** CATIA V5, SolidWorks, CADeSIMU, ANSYS (Fluent, Static Structural)
- **Data Analysis:** Pi Toolbox, MoTeC i2 Pro, McLaren ATLAS
- **Programming:** MATLAB, Arduino, Python
- **IT Skills:** MS Office, SAP (Work orders and part stock management for maintenance planning)
- **Individual Interests:** Handball Player, Bucks Mavericks and Cranfield Wolves Handball Club – moved by the competitiveness and discipline of the game. Travelling – enjoy learning from other cultures and travelling the world to experience the diversity of human behaviour through connecting with people. Motorsport Fan – inspired by the Porsche 911 G Turbo.

# PRANSHU VYAS

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Cranfield University

## PERSONAL STATEMENT

A Mechanical Engineer with experience in developing computational software for companies and research labs. Strong communication and leadership skills built through working in multidisciplinary student engineering teams. Enjoys working on challenging and new problems and adopts creative methods to reach better solutions. Curious about new mobility technologies from hybrid and electric vehicles to hyperloops with previous experience in the same.

## EDUCATION

**MSc in Advanced Motorsport Engineering, Cranfield University, Cranfield, UK** **October 2024 - October 2025**

- **Modules:** Motorsport Powertrains (83%), Motorsport Electronics and Data Acquisition (77%), Motorsport Vehicle Dynamics (90%), Motorsport Aerodynamics, Motorsport Structures, CFD for Motorsport

**Bachelor of Engineering in Mechanical Engineering, BITS Pilani Hyderabad Campus, Hyderabad, India** **November 2020 - June 2024**

- **Relevant coursework:** Fluid Mechanics (8), Partial Differential Equations (8), Principles of Aerodynamics (10), Aircraft Propulsion (10), Vibrations and Control (10), Design of Machine Elements (8)
- **Individual Thesis:** Developing an Immersed Boundary Method Based Program Along with Turbulence Models To Simulate FSI Problems.

## CAREER HISTORY

**The Lab. of Fluid Dynamics and Technical Flows, OVGU, Otto-von-Guericke University, Magdeburg, Germany, Research Intern** **July 2023 - July 2024**

Research lab focused on experimental and computational fluid dynamics, especially the Lattice Boltzmann Method (LBM).

- Developed software for simulating flow past arbitrary moving geometries, by implementing the direct-forcing Immersed Boundary Method and integrating it with the lab's inhouse LBM based Multiphysics software.
- Incorporated Smagorinsky turbulence models with the LBM code, by modifying collision models making the software capable of running Large Eddy Simulations (LES) in flow regimes with Reynolds numbers up to 700,000.
- Parallelised the developed IBM code, using MPI to distribute simulation domain amongst multiple CPU cores, providing High Performance Computing capabilities to the software.
- Performed LES simulations of a rotating Darrieus tidal turbine with various blade shapes, using the developed IB-LBM software. Power coefficient results from the software matched experimental water tunnel tests.

**BosonQ Psi, Remote, Multiphysics Developer Intern** **November 2021 - May 2022**

Company focused on developing engineering simulation software with quantum computing capabilities.

- Integrated user inputs with solver code by developing functions and classes to read Json files and edit required variables, covering the pre-processing aspects of the company's first FEM based Multiphysics software.
- Benchmarked the developed software by performing structural and heat transfer simulations and assisted in debugging by analysing reasons for compile, runtime and result based errors, ensuring complete validation of the software.

## ACADEMIC PROJECTS

**Lattice Boltzmann Method for Fluid Flow, BITS Hyderabad** **July 2022 - April 2024**

- Developed a 2D low Reynolds Number (<500) fluid flow solver using the Lattice Boltzmann Method along with Two and Multi-Relaxation Time based collision models resulting in high stability of simulations.
- Added features of handling complex geometries by incorporating the Immersed Boundary Method, also resulting in 20% more accurate results for curved geometries when compared to bounce back boundary conditions.
- Validated code by performing benchmark simulations of Taylor-Green Vortex flow, Poiseuille flow, flow past curved geometries at different Re numbers. Numerical results matched widely published experimental results.

**Optimisation and analysis of a F1 2026 Power Unit Model, Cranfield** **October 2024**

- Analysed an AVL Boost model of the 2026 Formula One power unit by identifying key factors driving performance and effective fuel conversion efficiency in the model.
- Modified intake geometry to support increased turbo-boosting and obtain an average of 5% better BMEP with an average of 4% lower BSFC across all engine operating speeds, while keeping lambda within 1.5.

**Analysing vibrations of a racecar in ground effect, BITS Hyderabad** **March 2023 - July 2023**

- Analysed response of a model racecar in ground effect to variations in downforce and ride height by developing half-car and quarter car suspension models on Simulink, resulting in a better suspension tuning method.
- Incorporated CFD data of the vehicle into Simulink model as an aero map and evaluated best suspension parameters to ensure maximum grip of vehicle, resulting work was presented in the 50th National Conference on Fluid Mechanics and Fluid Power (FMFP 2023).

**Subsonic Wind Tunnel Design using CFD, BITS Hyderabad** **January 2023 - May 2023**

- Finalised the specifications of the wind tunnel by analysing the various applications to be tested. Designed CAD models of the specified wind tunnel capable of a peak inlet velocity of 50m/s in a 1.5m X 1.5m test section.
- Selected a polynomial curve profile ($5^{th}$ order Bell & Mehta) for the contraction section of the wind tunnel by conducting literature reviews and analysing results from CFD simulations, resulting design is being used for the construction of the facility at BITS Hyderabad campus.

**Shape Optimization of a Hyperloop pod using Genetic Algorithm, BITS Hyderabad** **January 2023 - May 2023**

- Performed Aerodynamic shape optimization of a hyperloop pod to minimize drag using a genetic algorithm-based program that resulted in 15% lower aerodynamic losses while travelling in a tunnel.
- Modeled the pod surface using $4^{th}$ order Bezier curves and coupled the genetic algorithm code to a developed inviscid compressible flow fluid solver, resulting in lower computational times.
- Obtained practical and realizable geometries by implementing physical constraints like the Kantrowitz limit and geometrical constraints on the Bezier curve parameters, resulting work was presented at the $50^{th}$ National FMFP.

**Method Of Characteristics for Nozzle Design, GitHub** **August 2022 - January 2023**

- Developed a code using the Method of Characteristics to numerically solve certain hyperbolic partial differential equations such as the 2D velocity potential equation for compressible flows.
- Demonstrated use on designing nozzles for supersonic flows, arriving at best nozzle contours to ensure optimum expansion of exhaust and maximum thrust for a given exit Mach number of 3.0.

## STUDENT ENGINEERING TEAMS

**Hyperloop India, Team Lead (22-23), Mechanical Systems Engineer (21-22)** **July 2021 - July 2023**

- Led a 40-member team to design a 1/3rd scale hyperloop pod prototype with top speeds up to 180 kmph, responsibilities included design ideation, project planning and design validation
- Designed a Linear Induction Motor based propulsion system for the pod, by performing electromagnetic simulations and validating results with published data, resulting motor produced 1.2kN thrust.
- Final pod design was selected for demonstration round at European Hyperloop Week 2023 and was also presented at the National Academy of Indian Railways.

**Team Vulcan, BITS Hyderabad, Powertrain Lead** **January 2021 - May 2023**

- Led a 5-member team to design an All-Wheel Drive powertrain for performing better in off road terrain.
- Decided and calculated key parameters (gradeability, acceleration, top speed, gear ratios etc.) of the vehicle and evaluated different drivetrain layouts to deliver good off-road performance with low cost of roughly 1.4k GBP.
- Performed hand calculations to size gears, shafts, bearings and gearbox & differential casings for various loading conditions while considering fatigue life, supplemented the calculations through FEA.

## SKILLS, INTERESTS AND EXTRACURRICULAR ACTIVITIES

- **Languages/HPC Tools:** C, C++, Python, MATLAB, CUDA, MPI
- **Software/Tools (Simulations):** AVL Boost, Ansys (Mechanical & Fluent), Comsol, MATLAB, Simulink
- **Individual Interests:** Enjoy playing tennis, cricket, and football (played competitively during school). Keen landscape photographer, eager to learn filmmaking and a big fan of Cristopher Nolan's movies

# Ben Watt | Cranfield, UK

b.watt1@yahoo.com +44 7957 452704 Full UK Drivers License

## Personal Summary

Dedicated and passionate engineer with a desire to learn, who will apply themselves to any problem or task, and always strives to complete the task at hand. Collaborates well with colleagues to produce coherent outputs and achieve goals as a team. Able to self-assess and identify further areas of improvement, and thoroughly enjoys any opportunity to learn and grow.

## Experience

**Aston Martin Lagonda** – *Electrified Powertrain Industrial Placement*

Sep 2022 – Aug 2023

- Assisted in the setup of a high voltage test bench through designing a mounting solution for the electric motor, generating .DBC files for data interpretation/analysis, and utilising CAPL script injection to configure precision current shunt sensors over CAN protocol
- Developed a Simulink-based test rig environment through establishing key network, control, and safety requirements and implementing software allowing Simulink to control CAN communication behind an accessible GUI
- Stripped down key powertrain components to build an understanding of technical operation and presented findings to the wider team to reinforce understanding and presentation skills
- Led supplier discussions as component owner of an EDU NVH jacket involving key project management tasks such as completing financial and timing risk assessments, supporting procurement RFQs, and evaluating supplier options via a weighted ECM spreadsheet

## Education

**Cranfield University** – *MSc Advanced Motorsport Mechatronics*

2024-present

- Finalist for Tyler James Alexander scholarship alongside 3 other students in partnership with McLaren Racing and Team Penske
- Taught Modules (average 72%): Motorsport Powertrains, Motorsport Electronics and Data Acquisition, Motorsport Vehicle Dynamics, Business of Motorsport, Mechatronics Modelling of Vehicle Systems, Advanced Control and Optimisation, Embedded Vehicle Control Systems, Vehicle Control Applications
- Group Design Project: Working in a team of 11 to develop a Hydrogen-Electric hybrid entry to endurance racing - specific focus on a HiL validated Brake-by-Wire system with blended regenerative and frictional braking

**University of Bristol** – *BEng Mechanical Engineering with a Year in Industry*

2020-2024

- Graduated with 1st Class Honours
- Achieved 72% in final year individual research project 'Investigation of Motor Control Strategies for High-Performance Automotive Applications' involving Simulink modelling of FOC and DTC algorithms for PMSM control
- Bristol Racing Greenpower Team
  - Worked as an Electrical Team Technical Lead (2023 – 2024) involving the management and leadership of a small team of 10 students to develop and improve the electrical and powertrain systems for the BR02 and BR03 racecars
  - Operated as Chief Race Engineer for our driver at the 2024 Castle Combe race by maintaining communication and employing strategy calls via radio
  - As a Chassis and Suspension Engineer (2020 – 2022) utilised Fusion 360 CAD software to develop the suspension system for the BR01 car including steering interfacing

## Skills

Programming

- Python, MATLAB, Simulink, Embedded C, CAPL

Mechanical Design

- Autodesk Fusion 360, Ultimaker Cura

Electrical Design

- KiCAD

Data Processing/Analysis (basic working knowledge)

- MoTeC i2, Cosworth Pi Toolbox, McLaren ATLAS

Microcontroller Systems

- Arduino, STM32

Version Control

- Git

## Certifications

**Vector** – *2-day CANalyzer Training Workshop*

May 2023

Learned about CAN at Physical and Data Link layers as well as how to use CANalyzer and supporting Vector tools to create DBC files, create CAPL scripts, run tests, view and replay data, build panels, and send/receive messages.

**IMI** – *Level 2 Award in Electric/Hybrid Vehicle Routine Maintenance Activities*

Mar 2023

Understood the basics of EV safety when conducting maintenance activites around HV equipment. Taught content included: Charging connectors, HVIL, warning labels, and practical verification of isolated system.

## Hobbies & Interests

DIY Electric Skateboard Project

- Began as part of my EPQ in late 2019 alongside my A-Level studies and has remained an ongoing project since.
- Integrated 36V components (including a BLDC motor with rear right wheel belt-drive, a 10s2p Lithium Ion battery, and an open-source VESC speed controller) and packaged around existing skateboard hardware with use of tupperware mounted beneath the board.
- Currently developing a third revision of the board with a custom PCB based on STM32 architecture and featuring BLDC motor control, front/rear light control, microSD data logging, and GPS tracking.

Skydiving

- Currently working towards achieving my solo skydiving A-license via Static Line Progression training.

Mountain Hiking

- Reached the summit of various notable mountains such as Mt Fuji, Ben Nevis, Snowdon, and Scafell Pike.

Distance Running

- Competed in Great Bristol Run Half Marathon 2024, Ahotu Silverstone Run Fest Half Marathon 2024, as well as various 5-10k events.

# MUHAMMAD YASIR

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Cranfield University

## PERSONAL STATEMENT

Mechanical Design Engineer with 6+ years' experience delivering complex solutions across public sector R&D, composites manufacturing, and automotive applications. Proven expertise in precision fabrication, CAD/FEA, and system validation within high-performance and safety-critical environments. Awarded the FIA Motorsport Engineering Scholarship for technical innovation and engineering excellence. Focused on performance, durability, and winning-level design execution.

## CAREER HISTORY

**Manager Tech - National Development Complex, Islamabad, Pakistan, December 2023 - August 2024**

Pakistan's national R&D organisation consisting of 15k+ employees providing hi-end technical solutions in advanced manufacturing, mechanical design, and reverse engineering:

- Led chassis, suspension, and structural subassembly development for high-load off-road trucks, using CATIA and Creo to deliver modular designs rated for harsh terrain
- Led track and field validation programmes in desert and tundra environments, integrating real-time strain and vibration sensors; results correlated within 8% of simulation, ensuring the chassis durability
- Oversaw advanced material selection and bonding techniques, including aluminium alloys and composite reinforcements, balancing structural integrity and mass reduction
- Authored system-level design reviews and led cross-discipline design boards, driving mechanical excellence from initial concept through prototype to in-service integration with zero critical failure events
- Streamlined the NCR resolution process and integrated Total Quality Management practices into the office operations within a team of 10 people

**Assistant Manager - National Development Complex, Islamabad, Pakistan, June 2018 – December 2023**

- Led the validation of process parameters for the filament winding process of composite pressure vessels, ensuring compatibility with the composite materials and dimensional accuracy
- Conducted strain rosette-based stress analysis of thick and thin-walled composite vessels to ensure reliability under operational pressures.
- Developed acceptance and qualification criteria for honeycomb-based ground support equipment and presented it to 5+ stakeholder organizations
- Collaborated the design and fabrication of a 50kT thermo-mechanical press using PTC Creo and ABAQUS
- Steered the design and analysis pressure vessels and shell-and-tube heat exchangers based on ASME BPV Section VIII and TEMA standards
- Delivered reverse engineering and quality control solutions utilizing Kreon 3D scanning and probing for high-precision inspection of engine components up to 10 microns

## EDUCATION

**Advanced Motorsport Engineering MSc, Cranfield University, Cranfield, UK October 2024 - October 2025**

- **Group Projects:** Hydrogen Storage, Distribution, and Safety system for *Hydrogen Le Mans Hypercar*, Design and optimization of brake pedal for Red Bull Powertrains, Design and manufacturing process planning of Composite Motorsport Wing

**Bachelor of Mechanical Engineering, PIEAS, Islamabad, Pakistan June 2014 - June 2018**

- **Projects:** Designed and fabricated composite bodywork for a Shell Eco-Marathon prototype
- **Thesis**: Analysis and Optimization of Gas Tungsten Arc Welding for Hight Strength Low Alloy Steel using DOE and verification on testbed

## SKILLS

- Presentation, Negotiation, Conflict and Workforce Management, Project Management, Program Management, Resource Allocation, Inventory Management
- PTC CREO, CATIA, SolidWorks, Autodesk Inventor, Plant 3D, PV Elite; ANSYS, ABAQUS, MATLAB, AVL Simulink, Pi Toolbox, Particle Works, ANOVA, Minitab; Microsoft Office, Power BI, Google Workspace, Project
- **Professional/Technical Trainings:**
  - Failure Analysis of Engineering Materials at Failure Analysis Center, IST
  - Autodesk Inventor at Institute of Space Technology
  - Welding Procedure and Welder's Qualification at Pakistan Welding Institute
  - Foundations of Project Management by Google
  - Engineering Project Management: Risk, Quality, Teams, and Procurement by Rice University

# ALEXANDRE ZUGAZAGOITIA

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## PERSONAL STATEMENT

A deeply passionate engineer with experience in both motorsports and aerospace. Undergraduate studies in aerospace engineering while working at an aerospace research laboratory which provided a high paced and dynamic engineering work environment. Through the lab, accomplished two polar research missions as a mission critical specialist using UAVs. Went on to pursue an MBA while simultaneously working in motorsports. Started as a pit marshal for an endurance racing series and by showing leadership, quickly got promoted to the pit lane leader in which I managed teams of 5 to 15 marshals throughout the race weekend. Continued the journey in motorsports working for a variety of teams and working 18 race weekends in 2023 while finishing the MBA. Currently working towards an MSc in motorsports engineering at Cranfield University and working for Invicta Racing in Formula 2.

## KEY ACHIEVEMENTS

**Centre for Remote Sensing and Integrated Systems (CReSIS), Tasiilaq, Greenland, Polar Research Mission Specialist** — **July 2022 - August 2022**

- Head Pilot and UAV technician on Heising Simons polar research mission deploying to Helheim Glacier for radar sounding of the outlet. Spent 11 days collaborating with a team of 4 camping next to the glacier outlet and Obtained usable data

**Jayhawk Motorsports Formula Student, Lawrence, Kansas, Aerodynamics Engineer** — **August 2021 - June 2022**

- Designed the front wing internal and external structure as well as rear wing swan neck mounting which increased downforce by 20% while reducing drag by 5%. Aided with CFD and performed vehicle testing to validate CFD results

**International Co-op Engagement Program for Polar Research, Disko Bay, Greenland, Polar Research Mission Specialist** — **July 2021 - August 2021**

- Headed flight operations and safety for ICE-PPR Greenland research mission on board the Danish Navy patrol vessel HDMS Ejnar Mikkelsen to drop GPS trackers on icebergs using large UAVs. Achieved to tag 27 Icebergs in 10 days

## EDUCATION

**MSc in Advanced Motorsports Engineering, Cranfield University, Cranfield, UK** — **October 2024 - September 2025**

- Thesis TBD focused in Aerodynamics/CFD

**MBA, University of Kansas, Lawrence, Kansas** — **August 2022 - December 2023**

- Master's in Business Administration, GPA: 3.84
- Focus in Management

**BS Aerospace Engineering, University of Kansas, Lawrence, Kansas** — **August 2018 - May 2022**

- Bachelor of Science in Aerospace Engineering, GPA: 3.19
- Capstone Project on Electric VTOL design and Formula Student focused on aerodynamics

## CAREER HISTORY

**Invicta Racing, Norfolk, UK, F2 Engineering Intern** — **January 2025 - Present**
Formula 2 Racing Team

- Assist the race and performance engineers during race weekends with analysis and communication
- Perform pre event analysis of past events at current track including sprint vs feature race comparison
- Relay broadcast radio messages to race team live during events
- Complete post race timing analysis, degradation numbers, pitstop reports, and other relevant analysis

**Garrison Flight Research Centre, Lawrence, Kansas, Systems Integration Engineer/UAV Pilot/Student Mentor** **October 2018 - August 2024**
Aerospace Research Laboratory

- Designed, manufactured, and systems integration on over twenty projects including NASA X-57, FAA A-35, FAA A-52, CReSIS Polar Missions, and others
- Managed preparation, systems testing, and piloting of Unmanned Aerial Systems on hundreds of flight tests
- Mentored a team of 10+ undergraduate and graduate students to develop hands on and leadership skills

**Random Vandals Racing, Concord, North Carolina, Tyre Technician** **January 2024 - August 2024**
IMSA/WRL Pro Race Team

- Handled all aspects of tyre preparation for the WRL and IMSA Michelin Pilot Sport Cup programmes with 1 and 2 car events including F82 and G82 generations
- Trained 2 veterans from Operation Motorsport how to complete tyre duties

**World Racing League, Chattanooga, Tennessee, Pit Lane Lead/Safety Car Driver/Tech Inspector Assistant** **May 2022 - February 2024**
Endurance Racing Series

- Designated marshal in charge of pit lane including ensuring teams follow proper procedures and management of between 5 and 15 pit marshals. Designated tasks to marshals and assured experienced marshals aided in new marshal development
- Conducted technical inspections to ensure racers safety and vehicle compliance at over 15 events
- Trusted backup driver for pace/safety car when needed during a race weekend. Completed many laps at 5+ racetracks

**ZOTZ Racing, Orlando, Florida, Assistant Car Chief** **May 2023 - January 2024**
Small SRO Customer Race Team

- Appointed as Assistant Crew Chief on a Cayman GT4 RS Clubsport running in the GT4 America class in SRO
- Trusted for ensuring the cars readiness for each of 6 sessions including tyres, fuel, repairs, set up changes, and appearance
- Communicated with the race engineering and performed set-up changes in order to ensure the car is set up to the 2 drivers needs

**TLM Racing, Miami, Florida, Car Chief** **January 2023 - April 2023**
International GT Customer Race Team

- Appointed Car Chief on a 991.2 Porsche 911 GT3 Cup running in the International GT Mission Foods GT3 Cup Championship
- Controlled the cars overall readiness for each of 8 sessions including tires, fuel, repairs, set up changes, and appearance

## SKILLS, INTERESTS & EXTRACURRICULAR ACTIVITIES

- LANGUAGES — English (Fluent), French (Fluent), Spanish (Intermediate)
- HARD SKILLS — Motec i2, Autodesk Inventor, Siemens NX, Siemens Star CCM+, Matlab, Microsoft Suite
- SOFT SKILLS — Detail Orientated, Passionate, Accountable, Self Motivated, Team Player
- HOBBIES AND INTERESTS — Track driving/amateur endurance racing, sim racing, model ship building, 3D printing, remote control car racing, sailing, skiing, hiking
- NATIONALITIES — American, French, Mexican, and Spanish passports
- LOCATION — Milton Keynes, Buckinghamshire, England (Willing to relocate)