



DAN HALL

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Professional Summary

Mechatronics Engineer driven by pushing technological boundaries in emerging fields. From motorsport data systems to topology optimisation, I thrive in fast paced environments where innovation meets real world impact. Comfortable designing robust systems and getting hands on to prove them out, the best engineering happens when you're willing to dive in and test your assumptions.

Skills

- Python/Motorsport Data Analysis
- Prototyping: 3D Scanning / Printing
- Composite Manufacture
- FEA / CFD
- System Integration
- Mechanical Design / Optimisation / CAM.
- Electronics / Sensing / Wiring / Control
- Coding: C / C++ / R / Python / MATLAB

Work History



DEVELOPMENT ENGINEERING INTERN - NEUTRON, 11/2025 - Current

Rocket Lab, Auckland, AUK

- Developed test instrumentation including custom PCB design and National Instruments DAQ integration for stage separation mechanism validation.
- Designed mechanical components to support hardware testing of Neutron Upper Module separation systems
- Created wiring harnesses and sensor integration solutions for multi-channel data acquisition during functional testing.
- Documented comprehensive test procedures and analysis protocols for stage separation hardware qualification.
- Executed hands-on troubleshooting of instrumentation systems, to ensure reliable performance in high-vibration, high-load environments

MECHATRONICS TEST ENGINEERING INTERN, 11/2024 - 02/2025

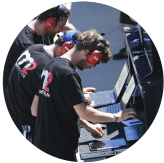
Rocket Lab, Auckland, AUK

- Testing and Validation of Electromechanical Actuators for the Neutron Launch Vehicle to meet performance and manufacturing requirements.
- Full Scale actuation of the Forward Fairing (Nose) composite structures.
- Designing and implementing Mechanical/Electrical Environmental Test Rigs and Flight Components.
- Documented critical insights into product performance and quality through Python data analysis of collected metrics during testing activities.
- Conducted performance testing under various conditions, identifying bottlenecks and recommending solutions for optimisation.



MECHANICAL DESIGN LEADER / RACE ENGINEER, 03/2022 - Current
University Of Auckland Formula SAE, Auckland

- 2025 Mechanical Design Leader oversaw CAD development, leading component optimization through FEA and iterative testing. Managed timelines and facilitated design reviews.
- 2024 Race Engineer, responsible for all safe and reliable operation of any Formula SAE car past or present.
- 2025 Chief Technical Officer Nominee.
- Managing driver training, fitness and sponsor acquisition.
- Hosting critical testing sessions for key performance parameter sweeps.
- Historical car revivals using period correct ECU tuning and diagnosis tools.
- Designed tailored tandem axle transporter.
- Composites design and manufacture of wing elements, chassis lamination, diffuser guide veins and low voltage battery casings.
- Mechanical assembly of systems such as planetary gearboxes and linear steering racks.
- Machining, Hand Calculations and Soldering to create custom components.
- Responsible for assembling the entire race car 2023-2025.
- Experience with Fusion CAM software to aid manufacture.
- 3D Scanning Gearbox profiles and dye fatigue analysis.
- 2022-2025 Winning competition driver in Autocross, Skidpad and Endurance events.
- MoTec i2 data analysis, chassis design and nTopology.
- Exploring other CAD software such as OnShape, Fusion, Inventor, NX and Solidworks.
- Cost event leader (3rd), 500-page report in Excel.
- Topology optimised jacking bar with ties to New Zealand culture to stringent rules using FEA.



DATA/RACE ENGINEER/MECHANIC, 01/2023 - 02/2024
M2 Competition, Auckland

- Data management and driver analysis for six Tatuus FT-60 race cars simultaneously over the course of the Castrol Toyota Formula Regional Oceania Championship.
- New Zealand Grand Prix 2024 winning team.
- Developed detailed KPI reports for driver progression.
- Race Engineer for Ryder Quinn's campaign utilising tyre pressure models, fuel calculations and car setup tuning.
- MoTec i2 Mathematical models development.
- Instantiated custom data cleansing software for increased efficiency.
- Collaborated with mechanics to coordinate successful preparation before every session.
- No. 2 Mechanic for Ryder Quinn's 2023 Castrol Toyota Formula Regional campaign.
- Improved vehicle performance by conducting thorough inspections and identifying necessary repairs.
- Maintained Tatuus FT-60 FIA spec Formula race car to ensure maximum reliability and presentation.



DATA ENGINEER, 05/2023 - 11/2023
Toyota Gazoo Racing New Zealand, Auckland

- Optimised MoTec data management/analysis specific to Toyota race cars such as the Tatuus FT-60 and Toyota GT86 used in the Castrol Toyota Formula Regional Oceania Championship.

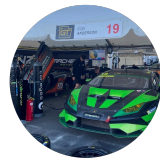
- Analysed the effect of new fossil-free fuel through on track testing and engine parameters.
- Attended test days at various race-tracks to work alongside rising drivers to maximise both driver and car performance.
- Designed and developed scripts for loading and analysing large datasets from MoTeC using KPI reports.



MECHANIC/TRAVELLING PIT CREW, 12/2020 - Current

Ebbett Motorsport, Palmerston North

- Maintained and modified various race cars such as McLaren 650s GT3s, Crawford Daytona Prototypes, Porsche's, and Rally cars.
- Travelled with SBT Motorsport and their McLaren 650s GT3s to endurance events as an all-around Pit Crew member.
- Tyre management and data analysis.
- Inspected equipment to locate worn and damaged parts.
- Modifications to improve performance such as optimized Aerodynamic, Cooling and Motor packages.



MOTORSPORT MECHANIC/DATA ENGINEER, 02/2023 - 02/2024

Mackenzie Motorsport, Auckland

- Race-track running and maintenance of GT3/GT4 McLaren's, Lamborghini's, Radical's, and Toyota GT86s.
- Utilising data analysis to maximise performance and monitor part health specifically on Radicals.
- Completed pit stop responsibilities and damage diagnosis during Endurance racing scenarios.
- Performed diagnostic and troubleshooting procedures to find and identify root causes of mechanical issues.



MECHANIC/RESTORER, 03/2020 - Current

Autoworx Ltd, Palmerston North

- Specialise in antique Land Rover restoration including a ground-up rebuild of a 1985 Defender 110 into a competition winch truck.
- Construction of the engine, interior, suspension, body work and electrical system.
- Utilising CAD to design custom components such as a winch bumper for water-jet cut and CNC bent manufacture.
- Manufacturing custom wiring harnesses for accessories.

Education

Bachelor Of Engineering With First Class Honours: Mechatronics Engineering

University Of Auckland - Auckland, NZ, 11/2025

- Dean's Honours List, 2022 (GPA 8.75) 2025 (GPA 8.67)
- 4x Scholarships Recipient
- Member of Auckland University Engineering Society and Mecha Club.
- Carbon Fibre Torsional Structures in a Motorsport Setting, Anti-Roll Bars - Research Project

High School Diploma

Palmerston North Boys' High School - Palmerston North, NZ, 02/2021

- Accelerated Student Program
- NCEA Level 2 Excellence - Year 11
- NCEA Level 3 Merit - Year 12
- Completed NCEA and sat scholarship papers a year ahead and graduated a year early to work on McLaren and other race cars to gain experience and funding for University Studies.

Languages

English

Native or Bilingual

German

Limited Working

Awards

- 2022 2025 UOA Engineering Dean's Honours List
 - 2024 Gordon Mallinson Award UOA FSAE: Team member with the fiercest commitment.
 - NCEA Level 2 Excellence - Year 11
 - NCEA Level 3 Merit - Year 12
- Society of Petroleum Engineers (SPE) Scholarship •

References

Maurice Ebbett - Ebbett Motorsport

Extracurricular Activities

- Formula SAE
- University of Auckland Rocketry Club
- 4x4 Winch Competitions / Classis car restorations
- Racquet Sports, Endurance Running and Football
- Machining / Personal workshop projects