Ana Lizette **González Cataño**

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Summary

Mechanical Engineer graduate from Tecnológico de Monterrey with an M.Sc. in Advanced Motorsport Engineering from Cranfield University, specialising in vehicle dynamics, composite structures, suspension design, and data driven development. Hands-on experience includes race scrutineering, CAD packaging on motorsport applications, composite testing, and modeling of track profiles for simulation.

Education

Cranfield University — *Cranfield, United Kingdom*

M.Sc. Advanced Motorsport Engineering — *Sept. 2023 - Sept. 2024*

- Modules: Powertrains, Motorsports Electronics and Data Acquisition, Business of Motorsport, Vehicle Dynamics, Aerodynamics, Computational Fluid Dynamics, Composite Structures, Structural Analysis
- Extracurricular Activities: F1 Design Sprint

Tecnológico de Monterrey — *Chihuahua, & Monterrey, México*

B.Sc. Mechanical Engineering — *Aug. 2019 - June 2023*

- Final grade of 92.32 with Academic Distinction
- 40% merit scholarship granted due to academic performance & entrance evaluation
- Extracurriculars: Gravity Racecar Team (build & driver), Teaching & Leadership programme, violin workshop
- Notable electives: Automotive Engineering, Data Science, Public Speaking, Ethics & Sustainability

Relevant Motorsport Experience

Technical Safety & Scrutineering Volunteering — *Chihuahua, Chihuahua, México*

Super Copa Roshfrans — *March 2023 - June 2023*

- Acted as a flag marshal for GTM and Tractocamiones sessions: monitored track activity and reported safety incidents.
- Conducted technical scrutineering: seal verification, chassis and intake inspections, PPE compliance checks (FIA/SFI/SNELL).
- Assisted with pit lane operations, scale setup, vehicle positioning, and fuel sample collection.
- Supervised garages to prevent unauthorised modifications and handled post-incident vehicle inspections.

Technical Projects

Group Design Project: Alternative-Fuel Racing Vehicle — *Cranfield University, United Kingdom*

Multi-Disciplinary 3-Month Project — *February 2024*

- Contributed to concept design of a rotary-engine racing vehicle for drag, circuit, and rally style events whilst being street legal.
- Designed the suspension system including in-wheel motor packaging, horizontal damper layout, and custom knuckle geometry.
- Built realistic track models (Matlab, Solidworks, Blender, OpenStreetMap, DEM, LIDAR) for simulation and vehicle dynamics evaluation.
- Developed Matlab tools for early suspension configuration (ride frequencies, spring and damper selection).
- Researched rotary engine architectures to evaluate performance feasibility under emissions constraints.
- Produced regulatory-compliant bodywork and lighting elements and contributed to final visual renders.

Carbon Fibre Wing Airfoil with Flax C Spar/Core — *Cranfield University, United Kingdom*

Composite Structures Project — *January 2024*

- Manufactured a composite airfoil featuring flax fibre reinforcement, ensuring process repeatability and quality control.
- Calculated theoretical deflection and validated using 3-point bending tests, as well as comparing discrepancies using structural analysis.

M.Sc Thesis "Evaluating the Feasibility of Flax Fibre Reinforced Rubber: Sustainable Material for Tyre Production" — *Cranfield University, United Kingdom*

by Ana L. Glez., Supervisor Dr. Veronica Marchante R. — *April 2023 - September 2023*

- Characterised flax fibres (treated and untreated) to assess mechanical performance for motorsport-compatible composite applications.
- Developed resin selection, testing selection, and ASTM-compliant procedures for composite evaluation.
- Proposed pathways for improving flax-matrix compatibility and mechanical reliability for tyre development.

Engineering Experience

Emerson — *Chihuahua, Chihuahua, México*

Design Internship — *March 2023 - June 2023*

- Designed precision tooling and fixtures relevant to motorsport manufacturing environments (tight tolerances, repeatability).
- Developed ergonomic tools, 3D-printed assemblies, and jigs that improved consistency and reduced operator effort.
- Updated technical drawings using ASME Y14.5 standards: corrected dimensional issues impacting production quality.
- Applied DFMA and DFA principles in multiple in-factory design improvements presented to supervisors and plant management.

Engineering Projects

Jaguar I-PACE Battery Tray Redesign
Tecnológico de Monterrey, Nuevo León, México

Automotive Engineering Course First Midterm Project
August 2022

- Re-engineered steel tray by using aluminium to reduce weight while meeting structural and thermal requirements.
- Conducted FEA and vibration analysis: evaluated DFMA and potential failure modes.

Autonomous Guide Vehicle (AGV)
Tecnológico de Monterrey, Nuevo León, México

Design and Manufacturing
November 2022

- Led chassis design and manufacturing using ASTM A36 steel for a hospital logistics AGV as well as performing a structural FEA analysis.
- Defined suspension mounting points, produced technical drawings and participated in welding and assembly activities.

Skills

Software

- MATLAB, Solidworks, NX, Python, AVL Boost, ANSYS, Pi Toolbox, MiniTab, MoTec

Engineering

- Suspension modelling, CAD packaging, FEA, composites, manufacturing methods, DFMA, structural testing

Other

- Power tools and workshop practice, welding, graphic documentation

Other Experience & Projects

Maker Fest Vehicle Mechanics Showcase & Presentation
Chihuahua, Chihuahua, México

Sucesso Motor Student Group
Novermber 21 2025

- by showcasing a few vehicle components and giving a short presentation on engine fundamentals and suspension systems, along with a small hands-on activity.

Graphic Design Contractor
Chihuahua, Chihuahua, México

FEI Hípica's Event
August 11 2025 - September 8 2025 (Contract)

- Designed guidebooks, banners, signage icons, and formatted documents following FEI branding and event specifications.

Event Support Staff
Chihuahua, Chihuahua, México

"Clásico" Club Hípico Campestre de Chihuahua
May 21 2025 - June 5 2025 (Contract)

- Supported logistics, awards delivery, vendor coordination, and administrative tasks during the annual show jumping competition.

Hackathon
Chihuahua, Chihuahua, México

Innovative Technology & Coding Competition
2018

- Developed a GPS-tracking pet collar concept, placed second overall.