

BRAULIO D. QUINTANA

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EDUCATION

B.S. Mechanical Engineering
University of South Florida, Tampa, FL

GPA: 3.2/4.0
Expected Graduation: May 2026

PERSONAL STATEMENT

I am an engineering student focused on systems integration, bringing a disciplined and collaborative approach to complex projects. In recent years, I have strengthened my technical knowledge and project management skills by executing subsystem integration work on a Formula SAE car, balancing performance tradeoffs against real packaging and manufacturability limits, coordinating cross-functional inputs, and CAD based validation to execute design iterations. I aspire to build my career in the motorsport industry, contributing to high-performance vehicle development where iteration, data-driven decisions, and validation are essential.

RELEVANT EXPERIENCE

Bulls Racing | Society of Automotive Engineers
Brakes Design Lead

Tampa, FL
July 2024 - Present

Formula SAE team that designs, manufactures, and competes with a student-built open-wheel race car.

- Decreased front rotor temperature by 250° Fahrenheit, by analyzing thermal performance to inform the selection of pad compounds with the ideal coefficient of friction and heat dissipation, enhancing braking efficiency.
- Simulated brake dynamics at maximum deceleration using MATLAB, allowing for accurate prediction of maximum torque, hydraulic pressure, and pedal force at 62% front brake bias ensuring optimal braking performance.
- Validated pressure sensor data to modify brake bias, analyzing results to optimize performance based on varying driving conditions, leading to improved control and vehicle handling.
- Improved pedal box packaging and installed a fixed pedal box system with dry brake disconnects. Modeled more than 30 components in SolidWorks, ensuring precise integration with the hydraulic system.

Auto Club Performance
Automotive Project Intern

Miami, FL
Jun – Aug 2025

Auto Club Performance is an automotive service and performance shop specializing in repair/maintenance and suspension and steering upgrades, including lift kits and custom build projects.

- Learned about machined tolerances for bearings, planetary gears, and shafts by rebuilding transfer cases and transmissions.
- Responsible for standardizing labeling, photo documentation, built processes, and significantly reducing rework and shortening closeout cycles across multiple concurrent projects.
- Coordinated with office staff and mechanics to purchase parts for engine, suspension, and transmission repairs.
- Designed CAD models of gas tanks and chassis components to aid measurements, visualization, and integration for custom project cars.

One Lap of America – Luxury Sedan Team
Lead Mechanic Intern

South Bend, IN
Mar - May 2025

One Lap of America is an eight-day, street-legal endurance challenge where teams compete in multiple timed events consisting of skidpad, autocross, drag strip, and road course.

- Conducted in-depth research on brake pad compatibility with BMW's M Carbon Ceramic Brake System, focusing on thermal resistance, rotor wear, and performance characteristics under race conditions.

- Collaborated with race team to plan and execute a pre-competition testing session, using lap times and driver feedback to identify areas for improvement, including the removal of 250 lbs. of interior weight.
- Communicated with drivers to tune rear wing angles and ride height settings based on dynamic events, optimizing aerodynamic balance and vehicle responsiveness.

USF Recreation & Wellness Center

Facilities Supervisor

Tampa, FL

Aug 2022 – May 2025

USF Recreation & Wellness is a Student Success department that provides programs and facility access across fitness, aquatics, and outdoor recreation for the USF campus in a multi-million-dollar facility.

- Oversee and manage the facility's operational and maintenance aspects, ensuring a safe and enjoyable environment for the campus recreational activities.
- Supervised and delegated responsibilities to a team of 7 staff members to ensure timely completion of shift tasks, resolve unexpected patron issues, and deliver exceptional customer service to daily guests.
- Coordinated scheduling and staffing for various facility areas, including fitness rooms, sports courts, and event spaces, to optimize resource utilization.
- Conducted regular inspections and maintenance checks of equipment and facilities, coordinating repairs and ensuring compliance with safety regulations.

USF Recreation & Wellness Center

Risk Management Assistant

Tampa, FL

Jan 2024 – Nov 2024

- Conducted regular assessments of the facility to identify potential hazards, and collaborate with relevant departments to address and mitigate those issues.
- Led monthly staff meetings to present and reinforce risk management policies across three campus facilities.
- Develop and maintain safety policies, procedures, and guidelines specific to the recreation and wellness center, ensuring compliance with industry standards with a staff of 100 employees.

SRO Motorsport Group

Scrutineering and Technical Inspection Intern

Sebring, FL

September 2023

SRO Motorsports Group is the established global leader in GT racing, organizing and promoting international GT championships and events worldwide.

- Performed technical vehicle inspections on all GT3 and GTA racing cars for competition, comparing total weight, camber angle, tire pressure, ballast, and ride height allowing the cars to be race compliant.
- Delivered pit stop reports to race control and the stewards as well as messages to teams.
- Conducted safety inspections on GT4 racing cars, ensuring compliance with regulations and FIA standards.

SunWiring Inc.

Installer / Assistant to Project Manager

Ft. Lauderdale, FL

Jul – Aug 2023, July – Aug 2025

SunWiring Inc. is a low-voltage contractor specializing in structured cabling, fiber optics, and electronic security systems for commercial, industrial, and mission-critical facilities across Florida.

- In charge of interpreting and reviewing construction blueprints and drawings, to communicate between the construction team and electrical contractors to facilitate workflow and preparation of equipment needed.
- Installed security cameras on main office buildings for Spirit Headquarters and Chick-fil-A distribution center.
- Assisted with the delivery of structured cabling, access control, video surveillance system, and fiber for a 120,000 sq ft distribution facility.

ENGINEERING PROJECTS

Front Rotor Design

Bulls Racing - SAE

- Simulated seven different rotor designs using Ansys Static Structural & Steady State Thermal analysis by inputting its bounding conditions to understand the effects of slots, drilled holes, and vents on rotor surface.
- Learned how to use Optimum Lap to derive the maximum convection coefficient and heat flux values as my inputs for the Ansy Thermal analysis.
- Reduced 20% of the rotor's original mass to include slots and holes improving conduction heat dissipation by 150° F.

Master Cylinder / Caliper Validation

Bulls Racing - SAE

- Built a MATLAB-based brake system model to quantify how master cylinder bore size affects hydraulic pressure ratio, brake bias, and pedal travel, supporting design changes with hand calculations.
- Conducted parametric master cylinder sweeps in MATLAB to map pedal travel and identify configurations that increase modulation without exceeding acceptable travel.
- Modeled lock-up clamping force thresholds as a function of caliper piston area in MATLAB; demonstrated excess braking margin with the current 1.23 in² caliper and justified downsizing to 1.12 in² while maintaining lock-up capability.

Brake Pedal Design

Bulls Racing - SAE

- Performed static structural FEA in Ansys on a 7075-aluminum brake pedal, quantifying maximum von Mises stress and minimum factor of safety of 1.21 under a 2,000 N load case.
- Identified peak-stress regions from FEA results and used the findings to guide geometry refinement, reducing stress concentration reduction and design validation prior to fabrication.

Brake Line Manufacturing

Bulls Racing - SAE

- Created engineering drawings to be sent to manufacturer (BMRS) with exact dimensions of the soft and hardlines needed for the hydraulic system.
- Modeled every brake-line fitting in SolidWorks and integrated them to connect the lines from the master cylinder to the calipers, having a clear representation of the flexible hose distances.
- Routed brake lines within the vehicle master assembly, verifying packaging clearance and interference-free routing with powertrain, suspension, ergonomics, and electrical/sensor harness constraints.

Electronic Brake Bias Tuning

Bulls Racing - SAE

- Designed and integrated an electronic brake bias tuning system to improve driver usability and eliminate bias-cable tension/failure risk associated with manual adjustment.
- Programmed the servo rotation to brake-bias percentage, enabling the driver's "UP" command to reliably increase brake bias by 1% per button press through computed angular step sizing and PWM position control.

Transfer Case Rebuild

Auto Club Performance

- Rebuilt an automotive transfer case, disassembling, inspecting, and reassembling the geartrain and bearing/seal interfaces to restore correct engagement and power flow.
- Applied tolerance and fit principles (clearances, backlash, preload) to diagnose wear and ensure proper gear meshing, alignment, and smooth operation after rebuild.

MOTORSPORT EVENT EXPERIENCE

Formula 1 United States Grand Prixes (Miami, FL & Austin, TX)

2024 Season

Intervention Marshal

- Gained in-depth knowledge of motorsport safety standards and procedures for F1 vehicle recovery.
- Rapidly responded to on-track incidents, providing critical first-response interventions.
- Assisted in maintaining safety and smooth operation of the racetrack during practice, qualifying, and race day for F1, F1 Academy, and Porsche Carrera Cup.
- Collaborated with a team of marshals to ensure adherence to safety protocols and regulations.

IndyCar St. Petersburg Grand Prix

St. Pete, FL

Pit & Paddock Redemption

March 2023

- Managed access control to restricted areas, verifying credentials and enforcing perimeter rules.
- Supported pit lane and paddock operations, ensuring controlled, efficient flow of people, vehicles, and equipment.
- Assisted with crowd control, promoting safe circulation and compliance with established safety protocols.

BGB Motorsports

Sebring, FL

Team Assistant

September 2022

- Supported team operations during an SRO race weekend, executing day-to-day logistics and administrative tasks to keep the team race ready.
- Responsible for setup and breakdown of team equipment in the paddock/pit area, ensuring efficient transitions between sessions.
- Prepared tools and equipment for on-demand use, supporting mechanics and crew with fast turnaround during peak activity.

LEADERSHIP & AWARDS

Society of Automotive Engineering (SAE) - Design Lead

July 2024 - Present

Biomedical Engineering Society - Mentor

Aug 2023 – Dec 2023

NSLS Foundations of leadership Award

May 2023

National Society of Leadership and Success - Fundraising/Event Chair

Oct 2022 – May 2023

CERTIFICATIONS & COURSES

Google - Project Management Certificate

December 2025

HP Academy - Brake System Design and Optimization Course

August 2024

SolidWorks - Associate in Additive Manufacturing Certificate

July 2023

SolidWorks - Associate in Mechanical Design Certificate

July 2023

TECHNOLOGIES & STANDARDS

Matlab • SolidWorks • Ansys Mechanical • Fusion 360 • Motec i2 Pro • Monday.com • Confluence • SharePoint
• MS Office • Microsoft and macOS operating systems (Highly tool adaptive, can learn and operate new platforms rapidly).