Romer Pena

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Mechanical Engineering · Powertrain & Drivetrain Design · Test & Validation · Manufacturing

SUMMARY

Mechanical engineering student and Powertrain Co-Lead for Longhorn Baja Racing (Baja SAE), co-leading a 10-person team on 4WD drivetrain design and powertrain packaging. Built and validated a small-engine dynamometer (±0.08 N·m) and an intake redesign that raised brake power 13.5%. Skilled in SolidWorks, machining, data acquisition and MATLAB; 2+ years of IBM co-op experience. Seeking a Summer 2027 internship in automotive, powertrain or manufacturing.

EDUCATION

The University of Texas at Austin B.S. Mechanical Engineering (Manufacturing and Design) — Expected May 2028

GPA: 3.28 | Moody Scholar; UT For Me Scholar (2024–2028)

Relevant coursework: Internal Combustion Engines, Fluid Mechanics, Materials Engineering, Mechanics of Solids, Dynamics, Engineering Statistics, Numerical Methods (MATLAB), Experimental Fluid Mechanics Lab, Materials Engineering Lab

ENGINEERING EXPERIENCE

Longhorn Baja Racing (Baja SAE) Powertrain Co-Lead — Nov 2026 – Present | Austin, TX

Promoted twice in one season: Ergonomics and Powertrain Sub-Team Member (Feb – Oct 2026), Gearbox Project Lead (Oct – Nov 2026)

- Co-lead a **10-person** powertrain sub-team; scope of the gearbox project grew under my lead into a full four-wheel-drive (4WD) drivetrain system for a future vehicle.
- Lead powertrain repackaging; assembled the crankshaft-to-CVT, CVT-to-jackshaft and jackshaft-to-driveshaft links.
- Designed and iterated the seat mount, steering wheel hub and brake bias modulator bracket in SolidWorks.
- Cut cockpit interference **30%** by re-angling the steering column and seat; led the seat modification so seat, harness and firewall met Baja SAE rules.
- Fabricated body panels, selecting materials to meet Baja SAE rules.

Small-Engine Intake Redesign and Dynamometer ME 374C, 5-person team — Spring 2026

- Designed and built a belt-and-drum brake dynamometer for a Predator 79cc engine: machined 4-in. aluminum drum, belt-tension torque measurement and a Hall effect speed sensor.
- Wrote interrupt-driven Arduino firmware (debouncing, stall detection) that streamed engine speed to MATLAB for torque/power analysis.
- Validated the rig against known weights and an optical tachometer: **±0.08 N·m** torque uncertainty, **<1%** run-to-run variation.
- Designed a custom intake: SolidWorks-modeled, 3D-printed PETG manifold with a swept 45° bend replacing the stock 90° elbow, plus a lathe-turned 6061 aluminum velocity stack; leak-tested to 5 psi.
- Raised brake power **13.5%** at full throttle (496 W to 563 W) and **9.4%** on average across five throttle settings (target: 5%).

WORK EXPERIENCE

IBM P-TECH Co-Op Intern — Aug 2024 – Present | Austin, TX

- Supported a **75%** traffic increase by coordinating infrastructure capacity changes and monitoring service reliability.
- Coordinated cross-department service migrations with cross-functional stakeholders, delivering zero-disruption transitions.
- Built onboarding materials and led training sessions that shortened ramp-up time on updated internal platforms.

IBM P-TECH Intern — Jun – Aug 2024 | Austin, TX

- Analyzed **100+** incident reports to find recurring failure patterns (root cause analysis); proposed workflow changes that cut platform downtime **22%**.
- Presented findings to senior IBM leadership, earning a follow-on role building internal tools.

SKILLS

Design and CAD: SolidWorks (parts and assemblies), drivetrain and powertrain packaging, design iteration

Manufacturing: lathe turning, machining, 3D printing (PETG), body-panel fabrication, assembly

Test and Validation: dynamometer testing, data acquisition (DAQ), sensor calibration, uncertainty analysis, root cause analysis

Programming and Analysis: MATLAB, Python, Arduino (C/C++), SQL, engineering statistics, Microsoft Excel

Languages: English (native), Spanish (fluent) **Honors:** Valedictorian (2024); Latin American Achievement Award (2023–24)