

JUSTIN PADGETT

Mechanical Engineer · Aerospace Design, Analysis & Manufacturing

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Portfolio: justin-padgett-portfolio.netlify.app

Bilingual (English/Spanish) mechanical engineer experienced taking designs from concept through CAD, analysis, fabrication, and real-world testing. Hands-on field experience informs durable, serviceable designs, safe execution, and effective teamwork.

EDUCATION

B.S. Mechanical Engineering

Lehigh University

May 2026

Bethlehem, PA

- Coursework: FEA, Advanced Dynamics, Engineering Vibrations, Strength of Materials, Mechanical Elements, Fluid Mechanics, Thermodynamics, Numerical Methods, Senior Design Capstone; Reciprocating/Centrifugal Engines, Aerospace Engineering, Aircraft Design, Manufacturing, Materials & Processes, Metalworking, and Engineering Graphics.

SKILLS

Design & Analysis	SolidWorks, Fusion 360, ANSYS Fluent/Workbench (CFD/FEA), ABAQUS, Python, MATLAB, Adobe Creative Suite; drawings, reverse engineering, tooling/fixtures, physical test correlation
Fabrication	CNC/manual machining, waterjet, laser/plasma cutting, press brake/tube bending, MIG/TIG welding, 3D printing, wet/prepreg carbon fiber, vacuum bagging, woodworking
Automotive	Engine rebuild and machining, suspension and drivetrain systems, chassis fabrication, diagnostics/root cause analysis, competitive driving
Leadership	Car Club President/Treasurer, Merchandise & Design Lead, Fabrication Lead; FSAE Fabrication & Manufacturing Lead, Design & Merchandise Lead; Head Shop Monitor; Metal Shop Assistant Teacher

EXPERIENCE

Aero Capstone Fabrication Lead · Design & Merchandise Lead · Driver

Lehigh Racing, Formula SAE

2025 - 2026

Bethlehem, PA

- Team member since 2021; one of four engineers in Lehigh's first dedicated aero capstone and complete aero package. Led fabrication/manufacturing of CNC molds and mounting brackets.
- One of the team's drivers and its only member with vehicle-dynamics experience; translated test data into predicted response and set aero-balance targets.
- Led black/gold/silver livery, logo, apparel, paint, and surface finishing, color-matching the car to its powder-coated chassis.

President · Vice President · Treasurer · Design & Fabrication Lead

Lehigh University Car Club

Aug 2022 - May 2026

Bethlehem, PA

- Revived a defunct group into one of campus's largest clubs, directing a 17-person board, operations, charity work, outreach, and events.
- Founded its merchandise brand after funding fell to \$500; designed products and restored screen-printing, generating \$4,000-\$5,000 per semester while retaining ownership.
- Managed finances across four roles, securing event funding and structuring vehicle loan/debt service; launched a Rossin College endurance-racing league, won approval/funding, delegated the proposal and budget, and transitioned execution.
- Led exhaust, bumper, strut-brace, seat-bracket, and one-off part design/fabrication; served as lead mechanic, sole fabrication instructor, and co-instructor for manual driving.

Parts Designer and Fabrication Lead*Wilbur's Design Labs, Lehigh University***2024 - 2026***Bethlehem, PA*

- Translated non-engineer requirements from departments, research groups, and student teams into SolidWorks models/drawings; directed process selection, scheduling, machining, welding, and finishing to meet deadlines.

Head Shop Monitor · Metal Shop Assistant Teacher*Lehigh University Metal & Wood Workshop***2025 - 2026***Bethlehem, PA*

- Taught sheet-metal forming, MIG/TIG welding, CNC plasma cutting, fabrication, and tooling; as Head Monitor, supervised staff, safety, equipment, and manufacturability across concurrent projects.

Project Specialist*Lehigh University, College of Arts and Sciences***2025 - 2026***Bethlehem, PA*

- Built Art, Architecture, and Design projects with metal/wood shops, CNC/laser tools, SolidWorks, and Fusion 360, delivering to faculty specifications.

Mechanic and Part-Time Designer*NB Center for American Heritage***Summer 2025***Allentown, PA*

- Designed/made CNC carburetor spacers, 3D-printed prototypes, and vacuum-seal plates for engine pressure tests; also removed, tore down, and reassembled historic vehicles.

Apprentice Machinist*Precision Motor Cars (subsidiary of the NB Center)***Summer 2025***Allentown, PA*

- Rebuilt/machined historic engines end to end - blocks, heads, and crankshafts - to spec, completing about seven in eight weeks and reverse-engineering tolerances when replacements were unavailable.

Automotive Technician*Desert Rat Off-Road Centers***Summer 2024***Phoenix, AZ*

- Installed suspension/lift kits, bumpers, racks, covers, and lighting/wiring on trucks/SUVs; performed alignments, tire service, and maintenance. Installer experience now informs serviceable designs.

PROJECTS**Lehigh Racing LR-26 Aerodynamics Package****2024 - 2026***Senior Capstone*

- Four-engineer capstone delivered Lehigh's first complete aero package from airfoil selection and ANSYS Fluent CFD (full-car Cl/Cd 2.23) through fabrication and competition.
- Led rear-wing mounting from swan-neck concept to four-link carbon-rod/tension-cable system; helped machine aluminum front mounts and produced all CNC foam split molds.
- Continued post-course through layups, hardware, and finishing; passed Formula SAE Michigan tech and completed the event with measured lap-time gains.

ATLAS Vehicle Performance**Oct 2022 - Present***Freelance Design & Fabrication*

- Independent vehicle modification/maintenance practice extending into SolidWorks-designed, FEA-validated, fabricated or machined custom parts.
- Off-road and exhaust work funded by buying, repairing, and reselling about 11 vehicles.

2012 Dodge Challenger RT Off-Road Conversion**2022 - Present***Solo Build*

- Designed/fabricated a front bumper with radiator relocation, lift kit, light-bar brackets, strut brace, exhaust, and hard-mount roof rack without factory reference points.
- Designed long-travel control arms, choosing plate over tube via FEA/hand calculations; fixed two driveshaft-bracket failures caused by heat/angle fatigue. Parts proven off-road and cross-country.