

Max Kuchen

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SUMMARY

Mechanical engineering student with hands-on experience in composite manufacturing, CNC machining, and mechanical system design. Strong background in carbon fiber structures, fabrication-driven design, and applied analysis through independent engineering projects and team-based work.

EDUCATION

University of Colorado Boulder - Bachelor of Science, *Mechanical Engineering (transfer in progress)*

Expected Graduation: June 2028

Minor: Business | **Extracurriculars:** CU Boulder Racing Team – Endurance Division (Mechanic)

International Experience: Sevilla, Spain study abroad

TECHNICAL SKILLS

Manufacturing & Fabrication:

Carbon fiber wet layup & vacuum bagging, mold design, composite tooling, MIG (flux-cored) welding, CNC machining (manual & CNC), 3D printing (FDM, PLA), prototyping and mechanical assembly

Design & Analysis:

CAD (Onshape), aerodynamic simulation (SimScale), basic structural analysis, design for manufacture

Tools & Practices:

Calipers and micrometers, fastener standards & torque specs, shop safety, engineering drawings

Programming:

Python (in progress), C++, HTML/CSS

ENGINEERING PROJECTS

Custom Carbon Fiber Automotive Wing | September 2025

- Designed 64-in carbon fiber wing using CFD in SimScale to achieve 220 lb downforce @100 mph with 10.43 DF/Drag
- Benchmarked vs. Nine Lives Racing wings; matched aero performance at ~30–50% of the mass with 6.88 lb total system weight
- Performed strain-based structural analysis from CFD loads; 0.353% peak strain, 1.266 MoS at 1,450 lb ultimate load, >3,200 lb failure load
- Fabricated full composite assembly using 3D-printed molds, vacuum bagging, forged carbon pylons, and CNC aluminum inserts

Composite Coupon Testing & Process Optimization | Ongoing

- Designing a composite coupon testing program to evaluate effects of weave, ply orientation, and resin-to-fiber ratio on mechanical performance
- Developing repeatable wet layup and vacuum bagging procedures and a custom fixture/jig to ensure consistent fabrication, enabling comparison of stiffness, strength, and failure modes

PROFESSIONAL EXPERIENCE

Independent Woodworking & Fabrication | Summer 2025

- Designed and fabricated custom mixed-media wall panels, including layered resin compositions and fine-finish hardwood frames
- Executed precision cutting, joinery, sanding, resin casting, and finishing to achieve consistent dimensional accuracy and surface quality

Rhythm Bikes, Oakland, CA

General Manager | Aug 2023 – Aug 2024

Sales Associate | Jun 2021 – Aug 2023

- Diagnosed and performed basic to advanced mechanical repairs across a wide range of bicycle systems
- Led daily shop operations including scheduling, task delegation, and quality control
- Generated \$240K+ in revenue, consistently exceeding performance targets
- Communicated technical issues and repair tradeoffs clearly to non-technical customers

LANGUAGES

English (Fluent) | German (Fluent) | Spanish (Proficient)