Cole Rutkowski

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PERSONAL PROFILE

- Senior year Mechanical Engineering student with hands-on fabrication expertise and leadership experience in engineering projects. Passionate about designing and testing innovative solutions in mechanical systems and outdoor gear.

EDUCATION

MS in Mechanical Engineering, University of Colorado Boulder Graduation Date: May 2027
BS in Mechanical Engineering, University of Colorado Boulder Graduation Date: May 2026

- Extracurricular Courses: ACE CNC Machining Training, Welding, Machine Shop Safety and Technology, Operation of Universal Test Machines, 3-Week Bicycle Frame Building Class GPA: 3.55
- Relevant Coursework: Dynamics, Thermodynamics, Materials Science, Solid Mechanics, Fluid Mechanics, Heat Transfer, Component Design, Manufacturing, Data Analysis, Computational Methods, System Dynamics, Design of Coffee, Feedback Control, Aesthetics of Design
- Certifications: SolidWorks CAD Design Associate (CWSA), ACE CNC Machining Training Program

SKILLS

Fabrication: Lathes & Mills (300+hrs), MIG/TIG Welding (300+hrs), Brazing (50+hrs), Waterjet, 3D printing
Measurement Operations: Keyence CMM and MMS, Universal Testing Machine, Electron Microscopy, High Speed Cameras, Specific Gravity Balance, Torque Gauge
Software: SolidWorks, MasterCam, CAM+, Matlab, Python, C++, HTML, CSS, Microsoft Office, Excel

WORK EXPERIENCE

Research Technician, Granular Flow Lab at University of Colorado Boulder January 2025 - Present

- Designed, manufactured, and assembled projects for rheology experiments, including a 3x3x3m T-slot frame to mount 150kg motor above experiment. Design was approved by a structural engineer.
- Streamlined design for manufacturability and cost reduction of photoelastic-particle casting mold.
- Produced 1m-diameter silicone gaskets for large rheometer experiment.

Machine Shop Assistant, Idea Forge at University of Colorado Boulder September 2024 - January 2025

- Taught students basic machining processes including lathes, mills, bandsaws, presses, and tool selection.
- Instructed manufacturing and assembly of air-powered wobbler engines for class projects.

Quality Control Intern, Trelleborg Sealing Solutions Denver June 2024 - August 2024

- Created detailed documentation for quality control processes, improving testing efficiency.
- Designed and standardized procedures for torque, tensile strength, and hardness testing.

ENGINEERING EXPERIENCE

Senior Design August 2025 - Present
Baja SAE, Chassis and Manufacturing Engineer

- Designed, engineered, built, tested, promoted and competed a single-seat all-terrain sporting vehicle.
- Designed chassis and integrated subsystems within rule specifications.
- Managed manufacturing reports, drawings, and schedule.

Class Project August 2024-December 2024
Drill-Powered Tricycle

- Designed, manufactured, and tested drill-powered tricycle for class competition. Set endurance competition record.
- Managed project lifecycle, including design, welding, machining, and testing of the frame and drivetrain.
- Welded frame components and machined adapters to optimize system performance.

Personal Project September 2023 - Present
Making and Testing Climbing Nuts, Hexes, and Cams

- Machined custom components with waterjet, lathe, and mill from Aluminum 6061-T6.
- Researched mountaineer, homemade, and professionally-produced gear made between 1970 and present.
- Tested aircraft-cable extensions in tension machines.
- Fall tested new gear on real rock with increasingly large falls (30ft max).

EXTRACURRICULARS
Distance Running and Cycling
Trad Climbing and Mountaineering

I worked as a quality control intern for Trelleborg Sealing Solutions in the summer of 2024. I worked with their quality control team in reviewing all existing procedural and quality assurance documents. I researched each procedure and worked closely with engineers from every department to ensure the documents were up-to-date. My role gave me experience with inter-department communication and quality inspection devices like CMM, MMS, and UTM's.

Additionally, I worked as a machine shop assistant in the Idea Forge in the fall of 2024. I taught student to use lathes and mills, and how to approach tool selection and interpret engineering drawings when making a part. I helped the students manufacture and assemble air-powered wobbler engines throughout five 2-hour workshops.

Since January 2025, I have been working for Nathalie Vriend's Granular Flow Lab as a technician. I design, fabricate, and assemble large-scale rheology experiments. I have designed a high-speed camera , silicone gaskets, and framing and shelves for supporting a 1 meter diameter acrylic chamber. I am currently working on a frame design to mount a 150kg motor above a 3m diameter rotating experiment.

Something that is not reflected in my resume is a special bike-building class I am taking this summer. For three weeks, I am taking a one-on-one workshop with a professional frame builder. I will design the frame to my exact dimensions and comfort, which will account for its intended use and components. I will cut, cope, and braze all the tubes and eyelets. In the end, will build a touring bike, which I intend to ride coast-to-coast in the summer of 2026.

My hobbies are important to me and my identity and thus they are also relevant to my career. I enjoy swimming, biking, climbing, and running. I exercise quite often and find activity very important in my daily life. Additionally, I am very passionate about city design, specifically car-dependence. These interests will absolutely drive my career choices in the future.

I am super excited about committing myself entirely to one goal. I am fascinated by how much there is to know about any engineering product, how much there is to learn in general that I don't yet know, and the idea of knowing every possible aspect of a product that I design and produce. I am really excited about the successes and frustrations I will share with my colleagues and teammates.

My greatest strength is communicating with teammates working on different parts of a project. I find it very important that we understand what each of us is working on to have an integrated project. Additionally, I typically do not but heads with teammates, don't hold grudges, and am quick to apologize and acknowledge mistakes and differences in the interest of team cohesion. I am very aware about my own ego and make conscious efforts to not let it get in the way of our relationships as teammates and friends.