

Adam Cate

adam.cate@ucdenver.edu | (720)-768-9828 | <https://adamcate.com/>
<https://www.linkedin.com/in/adam-cate-5b52a2258/>

Education

University of Colorado Denver – BS in Mechanical Engineering

Graduating May 2026

Skills

Analysis: Finite Element Modeling, Computational Fluid Dynamics, Statistical Process Control (SPC)

Languages: C, C++, MATLAB, Python

CAD: AutoCAD, Siemens NX, SolidWorks, SolidWorks Simulation

Experience

Lead Mechanical Designer, IEEE Robotics Club (NASA MINDS) – Denver, CO *November 2023 – April 2024*

- Led an engineering team in the research and development of a cryogenic fixture prototype, demonstrating its viability
- Conducted engineering reviews, ensuring efficient fluid flow, minimal thermal stress, and design reliability in compliance with NASA Minds competition standards

Lead Programmer, NASA COSGC Robotics Team– Aurora, CO

August 2021 – May 2022

- Designed, fabricated, and programmed a rover that navigated the Great Sand Dunes
- Created a system for queuing rover driving actions, enabling smooth navigation & obstacle avoidance
- Participated in team reviews, strengthening the robot's design by eliminating unwanted flexing

Undergraduate Research Assistant, The Gaffney Lab – Denver, CO

May 2024 – December 2024

- Rewrote a Finite Element Analysis Python library, improving user-friendliness and performance
- Performed data-processing on Computed Tomography scans and Motion Capture Data of amputee patients, generating 3D models and aiding in prosthetics research

Projects

Two-Stroke Engine Restoration

- Restored an antique 1930s two-stroke combustion engine to working order
- Performed manual measurements to reverse engineer the assembly, 3d modeling and fabricating a miniature replica

Bridge Force Simulator (TrussSim)

- Created a bridge truss simulator in Python to aide in the structural analysis of statically indeterminate popsicle stick bridges
- Employed the Finite Element Method of displacements and stiffness to visualize elements in compression and tension, verifying the reliability of the physical model

Ball and Beam Control Systems Project

- Designed and fabricated a control demonstration using SolidWorks and 3D printing
- Used MATLAB, C++, and control theory to tune and program a PID ball balancing mechanism, achieving stability