

Casey Sauer

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Education

NORTHEASTERN UNIVERSITY

Candidate for Bachelor of Science in Mechanical Engineering | GPA 3.9/4.0

Expected May 2023

Honors: University Honors Program, Ujima Global Leaders Program, Dean's List

Relevant Coursework: Aeronautical Propulsion, Aerodynamics, Gas Turbine Combustion, Heat Transfer, CFD, Fluid Mechanics, Thermodynamics, Mechanics of Materials, Material Science, Dynamics, Statics, Electrical Engineering

Experience

FGC PLASMA SOLUTIONS | Middleton, MA

Thermofluids Engineering Co-op

July 2022 – Present

- Independently develop a complete liquid fueling system, including validation of desired flow characteristics.
- Design, fabricate, and test high-voltage connectors for a plasma-based ignition system in scramjet applications.
- Model and machine various flow path and fuel ignition components with CAD/CAM and a Tormach CNC mill.

XL FLEET | Brighton, MA

Mechanical Engineering Co-op

June 2021 – Dec 2021

- Designed and validated power electronics enclosure for a solar-powered refrigeration trailer with consideration for ingress protection, electromagnetic interference, crash cases, and weight restrictions.
- Independently managed design of mounting brackets for various hybrid vehicle system components, including conceiving, prototyping, performing FEA, and drafting production drawings.
- Diagnosed and resolved driveline vibration by analyzing u-joint angles and using torsional vibration calculator.
- Proposed improvement to motor cooling system and performed thermal simulations and testing for validation.

NORTHEASTERN ELECTRIC RACING (FSAE) | Boston, MA

Chief Mechanical Engineer

May 2022 - Present

- Manage team of 70 engineers in the design and implementation of a FSAE Electric vehicle's drivetrain, handling, structural, ergonomic, and tractive system components.
- Coordinate across the mechanical, electrical, and business teams to develop project scope, timelines, and budget.
- Lead the mechanical team's administrative efforts, including overhaul of documentation guidelines, development of a welding training program, and facilitation of university resources with faculty.

Head of Dynamic Systems

July 2020 – Apr 2022

- Managed team of 20 in the development and design of the vehicle's drivetrain, suspension, brakes, steering, and motor cooling, including supporting project leads with design troubleshooting and feedback.
- Manufactured, welded, and assembled dynamic system components for testing and chassis integration.
- Designed the vehicle's CV axle system, differential sealing, and mounting for pinion shaft, bearing, and motor.
- Redesigned rear knuckles for manufacturability, reduced weight, and new function; verified integrity with FEA.

AEROSPACE NU | Boston, MA

Project Redshift Internal Mechanics Member

Apr 2020 – Apr 2021

- Designed, prototyped, and analyzed FEA simulations for the three-stage recovery system of a liquid-powered rocket.
- Researched remote release mechanism for the engine's pressurant and cryogenic fuel lines.

Project Karman Member

Sept 2019 - Mar 2020

- Modeled motor flanges, tail cones, and fin profiles to optimize altitude and stability in SolidWorks and OpenRocket.
- Manufactured centering rings and bulkheads assembled electronics bay and parachute recovery system.

Skills

COMPUTER: SolidWorks (CSWP), HSMWorks, ANSYS Fluent, MATLAB, Autodesk Inventor, AutoCAD, VXelements

FABRICATION: Manual mill/lathe, CNC mill, MIG welder, TIG welder (basics), shop tools, 3D printer, soldering

Activities & Interests: Skiing, hiking, rock climbing, camping, photography