

# Mason Canfield

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## Skills

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**CAD / Design:** SOLIDWORKS (CSWA); Fusion 360 (parametric modeling, assemblies, drawings); OpenRocket

**Simulation / Analysis:** Finite Element Analysis (FEA); ANSYS Mechanical (Static Structural, Modal); meshing, boundary conditions, result interpretation

**Programming / Tools:** MATLAB; Arduino (embedded programming, sensors); LaTeX

## Projects

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### Engine Mount Backplate Structural Analysis

ANSYS Mechanical, Fusion 360

- Simplified a small internal combustion engine assembly to isolate a structurally critical rear mounting backplate
- Developed a solve-ready finite element model with material assignment, localized mesh refinement at bearing bores and fastener holes, and representative axial, radial, and torsional loading
- Interpreted deformation and stress results to evaluate load paths and identify critical regions

### Model Rocket Design & Flight Performance Analysis

Madison Aerospace Club

- Conducted OpenRocket trade studies examining fin geometry, body length, mass distribution, and motor selection
- Evaluated apogee, static stability margin, and overall flight performance against competition constraints
- Supported preliminary design selection for fabrication and upcoming flight testing

### Small-Scale Vehicle Body Design & Wind Tunnel Testing

ASME Project Streamline

- Modeled and fabricated a small-scale vehicle baseplate in Fusion 360 for additive manufacturing
- Developed aerodynamic body iterations and evaluated drag trends using SOLIDWORKS Flow Simulation
- Collaborated on a three-person team to validate performance through controlled wind tunnel testing

## Experience

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### Student-Athlete Tutor (Mathematics & Science)

James Madison University

Jan 2025 – Present

- Tutored student-athletes in mathematics and science, reinforcing core concepts and structured problem-solving strategies
- Developed individualized review materials to support exam preparation and academic performance

### Landscaping Technician

Steeplechase Lawn Services

May 2023 – Aug 2025

- Maintained and repaired landscaping equipment, including small engines and power tools
- Diagnosed mechanical issues and performed routine maintenance to ensure equipment reliability

## Education

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### James Madison University

Bachelor of Science in Engineering (Electro-Mechanical Systems Concentration)

Minor in Mathematics | Minor in Robotics

GPA: 3.44 / 4.00

Expected May 2027