

Owen Pavlock

U.S. Citizen

Ann Arbor, MI | opavlock@umich.edu | linkedin.com/in/owenpavlock

EDUCATION

University of Michigan, Ann Arbor

GPA: 3.87/4.00

Bachelor of Science in Aerospace Engineering, Minor in Business

Expected May 2029

- **Relevant Coursework:** Aerospace Structures, Dynamics & Vibrations, Space Systems MBSE Project (AEROSP 388)
- **Certification:** INCOSE Systems Engineering Certification (Expected May 2027)

ENGINEERING EXPERIENCE

HIROTEC America | Tier 1 Automotive Body-in-White Tooling & Automation

May 2026 - Aug. 2026

Research & Development Intern | Robotic End Effector Project Champion

Auburn Hills, MI

- Conceived, pitched, and secured **\$11,200** for a flexible robotic end effector to grasp 5-20 kg parts of varied geometry; as sole Project Champion, led requirements through verification and directed intern support, finishing **3 weeks early** and **\$5,000 under budget**.
- Designed a **3-finger, 6-motor tendon-driven gripper** in Siemens NX using biomimetic tendon routing (modeled on human flexor tendons and annular pulleys), Bowden-cable transmission, and capstan drums driven by Arduino-controlled NEMA 17 steppers.
- Derived fingertip kinematics and per-joint gravity torques with homogeneous transforms and rotation matrices; built parametric capstan drum models in CadQuery (Python) and fabricated prototypes through iterative 3D printing.
- Wrote a **3-stage verification plan** (load-cell fingertip force, friction coefficient, static payload); briefed executives on a design that **outperformed a multi-month effort** by the Japanese parent company's team, then delivered a formal handoff package.
- Identified process gaps in weld verification and robot programming; proposed fixes projected to cut verification time by up to **50%** and prevent recurring errors caused by missing documentation.

PROJECT TEAMS & LEADERSHIP

MathWorks & Space Physics Research Lab (SPRL) | MAAX UV Imager Proof of Concept

Aug. 2026 - Present

Risk Lead & Avionics Team Member (AEROSP 388):

Ann Arbor, MI

- Lead risk management for a team applying **Model-Based Systems Engineering (MBSE)** to scope UV imaging analysis for MAAX, a potential NASA Heliophysics SMEX mission; brief MathWorks and SPRL stakeholders biweekly.
- Defined objectives and requirements for analyzing auroral UV imagery from the MAAX Ultraviolet Imager (MUVI), maturing the design through multiple **design reviews** to baseline.
- Integrating the lens architecture, avionics, and camera system for a weather balloon flight to **90,000 ft** to prove the concept.

Michigan Aeronautical Science Association (MASA) | University of Michigan Rocketry Team

Aug. 2025 - Present

Chutes & Tethers Responsible Engineer (Recovery):

Ann Arbor, MI

- Lead a parachute and tether **shock-load verification test**, building a MATLAB dynamic model to predict system response and verify structural integrity to **4,000 lbf** in support of flight certification.
- Leading design of a skirt-reefed main parachute that disreefs in stages, consolidating a three-parachute recovery system into a single canopy while minimizing opening shock loads.
- Building a **6-DOF flight simulator** in C++ on NASA's Trick and JEOD frameworks (Linux), defining the architecture (job scheduling, integration loops, physics models) to support multi-rocket configurations.

Engineering 100: Rocket Science | Sensor-Payload Rocket Design Project

Aug. 2025 - Dec. 2025

Design Team Member:

Ann Arbor, MI

- Took a sensor-payload rocket through its full lifecycle (design, build, integration, launch, and flight-data analysis), defending the design at formal **Preliminary Design (PDR)** and **Flight Readiness Reviews (FRR)**.
- Analyzed flight data to compile a **Root Cause Analysis** after the rocket's landing deviated from simulation predictions.

M-Fly Design Team | SAE Aero Design

Aug. 2025 - May 2026

Aerodynamics Team Member:

Ann Arbor, MI

- Ran airfoil and 3D aircraft analyses (AVL, STAR-CCM+) to validate the design against critical flight parameters and drag coefficients, driving iterative changes that **reduced takeoff time by 20%**.

TECHNICAL SKILLS & ACTIVITIES

Programming: MATLAB, C++, Python, Arduino, Linux/Bash

Engineering Software: Siemens NX (CAD), CadQuery, STAR-CCM+ (CFD), AVL, NASA Trick/JEOD, Microsoft Office

Systems Engineering: MBSE, Stakeholder Needs & Requirements Definition, Risk Management, Design Reviews (PDR/FRR), Verification & Test Planning, System Integration, Root Cause Analysis, Technical Documentation, Stakeholder Briefings

Fabrication & Hardware: 3D Printing, Machining, Soldering, Stepper Motor Control, Load Cell Instrumentation

Activities: AIAA (Professional Development Committee), 42 Strong | **Interests:** Finance, Football, Websites, Poker