

EDUCATION

Massachusetts Institute of Technology

- Master of Science in Aeronautics and Astronautics
- Bachelor of Science in Aerospace Engineering

Cambridge, MA
Anticipated June 2019
June 2017

RESEARCH EXPERIENCE

Project Firefly

Graduate Researcher

Cambridge, MA
September 2017 - present

- Develop methods for internal ballistics modeling of solid rocket motors for the Firefly vehicle, a class of kilogram-scale, rocket-powered drones
- Formulate, cast, and characterize a family of slow-burning propellants for low-pressure, end-burning motors
- Design and 3D-print custom molds for propellant casting, sensor mounting, and other applications

Automated Composite Inspection Research Project

Project Designer

Cambridge, MA
January – December 2016

- Designed and built an automated visual inspection system integrating a CCD camera and computer vision software to localize ply edges in pre-preg carbon fiber layups
- Developed a ply edge localization application and user interface in Python utilizing OpenCV

Space Propulsion Laboratory

Undergraduate Researcher

Cambridge, MA
January 2014 – May 2016

- Designed and machined parts for fabrication of the ion Electrospray Propulsion System, a compact and efficient propulsion system for CubeSats
- Developed an alternative process for bonding thruster components using sintered glass to replace an existing unreliable process

INTERNSHIP EXPERIENCE

The Boeing Company

Flight Engineering Intern

Huntsville, AL
June – August 2016, June – August 2017

- Compiled and presented test procedure data packages for the Space Launch System's flight termination system pyrotechnics to NASA for Range Safety approval
- Developed a MATLAB tool to filter and analyze voltage chatter data for anomalous and unacceptable voltage signals
- Designed and prototyped a voltage and amperage tester for life cycle testing of limit switches

Northrop Grumman Corporation

Aerospace Engineering Intern

Manhattan Beach, CA
June - August 2015

- Developed MATLAB code to model the effects of contamination on the surface emissivity of the mirrors on the James Webb Space Telescope and designed a user interface to enable more people to utilize the model
- Characterized additively manufactured aluminum coupons and utilized results to select post-processing treatment parameters

RELEVANT WORK

AeroAstro 3D-Printer Workshop

Manager and Instructor

Cambridge, MA
January 2018 – present

- Implemented and manage a 3D printer workshop for the AeroAstro department with FDM and stereolithography printers
- Teach seminars on proper 3D-printer use, material selection, hazard awareness, trouble-shooting strategies, and designing for additive manufacturing

MIT Rocket Team

Safety Officer, Recovery Systems, Propulsion

Cambridge, MA
April 2015 - present

- Created a MATLAB tool to design gores for semi-ellipsoidal and toroidal parachutes given desired parachute dimensions
- Developed a motor burning analysis tool to generate expected thrust curves, burn rates, and chamber pressures for different solid motor formulations and geometries

Other Work: Team America Rocketry Challenge Mentor, FIRST Tech Challenger Mentor, MIT Rifle Team Assistant Coach

SKILLS

Software and Programming Languages: Python, MATLAB, Mathematica, Java; SolidWorks, OpenRocket, Burnsim

Machining/Manufacturing Skills: Mill, Lathe, Waterjet, Bandsaw, Laser Cutter, Sewing, Soldering, 3D Printing

Certifications: NAR Level 3 Certified, PADI Open Water Diver, FCC Technician Class License