

A maker and engineer with demonstrated skills in fabrication, design for manufacturing, modeling and optimization of constrained physical systems, scientific software, and technical communication. Excited to apply multi-disciplinary aerospace project experience to new challenges in emerging manufacturing technologies and processes.

SKILLS

Programming: python, MATLAB, Mathematica, git

Design Optimization: CasADi, AeroSandbox

CAD: SolidWorks, Creo, GrabCAD, ThangsSync, GD&T

Manufacturing: mill, lathe, waterjet, laser cutter, sewing, soldering, additive manufacturing (polymers, metals, and ceramics), solid rocket propellant production, composites, silicone mold production, polymer casting

EDUCATION

Massachusetts Institute of Technology

Cambridge, MA

Doctor of Philosophy in Aeronautics and Astronautics – Space Propulsion

Sept 2019 - May 2023 (Expected)

- Key classes: additive manufacturing, design of high temperature materials, structure of materials, cellular solids, space propulsion, rocket propulsion, matrix methods in data analysis

Master of Science in Aeronautics and Astronautics

Sept 2017 - June 2019

Bachelor of Science in Aerospace Engineering

Sept 2013 - June 2017

WORK EXPERIENCE

MIT International Center for Air Transportation

Cambridge, MA

Graduate Researcher

Sept 2017 - Present

- Designed and conducted experiments to measure the effects of solid rocket motor design parameters on exhaust plume radiant emission
- Developed an end-to-end differentiable model in python for exhaust plume radiant emission of rocket motors; utilized model and AeroSandbox computational framework to optimize aircraft design and analyze performance tradeoffs
- Managed a team of undergraduate researchers

MIT AeroAstro 3D Printer Workshop

Cambridge, MA

Instructor and Manager

Jan 2018 - March 2020

- Implemented and managed a 3D printer workshop for the MIT AeroAstro department with FDM and SLA printers
- Led seminars and hands-on workshops on proper printer use, material selection, hazard awareness, trouble-shooting strategies, and designing for additive manufacturing

Blue Origin

Kent, WA

Engines Materials and Processes Intern

June - August 2019

- Identified, mixed, and characterized alternative extrude honing media for improving interior surface finish of cast or additively manufactured components
- Designed and built a test rig for evaluating extrude honing media; tested effectiveness of developed extrude honing media at improving surface finish of test coupons

Boeing

Huntsville, AL

SLS Flight Termination System Intern, SLS Cryo Filters and Valves Intern

June - August 2016, 2017

- Compiled and presented test procedure data packages for the Space Launch System's flight termination system pyrotechnics to NASA for Range Safety approval
- Designed and prototyped a voltage and current tester for life cycle testing of valve limit switches; developed a MATLAB tool to filter and analyze data for lot acceptance testing of switches

Northrop Grumman

Manhattan Beach, CA

Aerospace Engineering Intern

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 implemented a GUI simplify use of the code
- Characterized additively manufactured aluminum coupons and utilized results to select heat treatment parameters