Dan Brogan

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Personal Website: *https://dan-brogan.github.io/Dan-Brogan-Engineering/index.html*

Education:

University of Southern California (USC) Expected Dec. 2021
M.S. Astronautical Engineering **GPA: 3.94**
University of Rhode Island (URI) May 2020
B.S. Mechanical Engineering **GPA: 3.94**
Robotics Engineering Minor, Mathematics Minor

Engineering Experience:

USC Rocket Propulsion Lab (RPL) 2021-Present
Analysis Engineer
- Using ANSYS to model carbon composite rocket fins under peak loading conditions for spaceshot launch vehicle
- Continued training in ANSYS

Space Engineering Research Center 2020
Structures Engineer for Lunar Lander Prototype
- Performed ANSYS structural analysis and hand calculation validation for vehicle and testing structures

NASA RI Space Grant 2019-2020
Rhode Island Space Grant Researcher for *Artificially Intelligent Satellite Servicing*
- Worked with Dr. Jouaneh and Dr. DiFilippo to create an optimized "You Only Look Once" (YOLO) based deep learning fastener detection system with Python

Lockheed Martin 2019-Present
Mechanical Engineering Intern (Secret Security Clearance)
- Technical Lead and Small Business Coordinator for a hydrostatic composite overwrapped pressure vessel (COPV). Used ANSYS for COPV FEA simulation and MATLAB for wall thickness trade study. Presented solution to NUWC.
- Prepared and conducted a presentation for Lockheed Martin Newport on Deep Learning for Computer Vision

URI Artificial Intelligence Laboratory 2018-2019
Roboticist
- Responsible for constructing robots, hosting Arduino workshops, and facilitating URI's new public AI lab

Raytheon 2018
Mechanical Engineering Intern
- Used CREO Parametric for modelling complex solids for several Internal Research & Development (IRAD) projects
- Presented work to Bill Dawson, Sr. Director of Mechanical Engineering

Engineering Projects:

5-Axis 3D Printer 2019-Present
- Developed prototype capable of following a 5-Axis toolpath, continuing improvement of software and hardware design
- Used Python to write G-Code interpretation and stepper motor control scripts from scratch
- Invented method for converting 3-Axis G-Code to 5-Axis G-Code using Python for printing axisymmetric parts

Titan (Moon) Entry Descent & Landing (EDL) Mission Design 2020
- Used MATLAB to simulate hypersonic, supersonic, & subsonic regimes for entry vehicle splashdown into Kraken Mare

3-Body Problem Orbital Mechanics Simulation
- Used MATLAB to numerically integrate and animate 3 body motion given masses and initial position and velocity vectors

NASA Venus Rover Mechanical Sensors 2020
- Worked with Mitch Brogan to design mechanical obstacle avoidance sensors for the public NASA HeroX challenge

Mechatronics Projects 2019
- Used Visual Basic, Arduino and Python to create control code for DC motors, heating elements, stepper motors, etc.

Turbo Jet Engine 2019
- Fabrication and testing of a turbo jet engine comprised of a turbocharger and oil system with pump controller

Pulse Jet Engine 2018
- Fabrication and testing of a valveless pulse jet engine that operates without moving parts

Professional Skills:

Mechatronics, Python, MATLAB, Arduino, Visual Basic for Forms Applications, ANSYS Workbench, CREO Parametric, Autodesk Inventor, SolidWorks, Microsoft Excel, TIG Welding, Metal Shaping, Propulsion, Composite Lamination

Associations:

URI Astroneering 2018-2020
President and Founder of URI Astroneering Club
- Started Aerospace Engineering Club for Students interested in rocket design and interplanetary colonization

American Society of Mechanical Engineers (ASME) 2017-2019
President of ASME URI Chapter
- Restarted previously defunct ASME URI Chapter. Organized & facilitated build projects, field trips and club meetings