Dan Brogan

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

EDUCATION:

University of Southern California (USC) Dec. 2021
M.S. Astronautical Engineering **GPA: 3.96**
Concentrations: *Space Systems Design, Space Applications*

University of Rhode Island (URI) May 2020
B.S. Mechanical Engineering **GPA: 3.94**
Minors: *Robotics Engineering, Mathematics*

ENGINEERING EXPERIENCE:

Fractal Forms USA LLC
President 2022-Present
- Manages 5-Axis 3D printer company. Leads R&D efforts for software, hardware, and electronics

Roger Williams University 2022
Adjunct Professor of Physics
- Taught physics labs for undergraduate Physics I and Physics II

USC Rocket Propulsion Lab (RPL) 2021
Analysis Engineer for spaceshot launch vehicle project
- Used ANSYS & MATLAB to validate retention rings and carbon-composite rocket fins. Static fire test in Mojave Desert

Space Engineering Research Center 2020
Structures Engineer for Lunar Lander Prototype
- Performed ANSYS structural analysis and hand calculation validation for flight 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 optimize a deep learning computer vision system for fastener detection

Lockheed Martin 2019
Mechanical Engineering Intern (Secret Security Clearance)
- Technical Lead and Small Business Coordinator for hydrostatic composite overwrapped pressure vessel (COPV)

URI Artificial Intelligence Laboratory 2018-2019
Roboticist
- Constructed robots, hosted Arduino workshops, and helped facilitate 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

PUBLICATION

Elsevier: Array Journal 2021
Title: "Deep Learning Computer Vision for Robotic Disassembly and Servicing Applications"
Authors: Daniel P. Brogan, Nicholas M. DiFilippo, Musa K. Jouaneh
Link: *https://doi.org/10.1016/j.array.2021.100094*

ENGINEERING PROJECTS:

5-Axis 3D Printer 2022-Present
- Using Python to develop 5-axis slicer, Arduino to develop firmware, and currently iterating on hardware prototype design

Lunar Rover Concept Architecture: Robotic Remote-Sensing Scout (R2-S2) 2021
- Developed lunar astronaut-assisting rover concept and presented to Buzz Aldrin as well as NASA NESF 2022 conference

Lunar South Pole Base Design 2021
- Designed lunar base including site selection, life support systems, EVA operations, among other considerations

Titan (Moon of Saturn) 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 Numerical Solver 2020
- 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

Pulse Jet and Turbo Jet Engines 2018-2019
- Fabrication and testing of a valveless pulse jet engine and a turbo jet engine

PROFESSIONAL SKILLS:

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

ASSOCIATIONS:

URI Astroneering (Founder & President) 2019-2020
URI American Society of Mechanical Engineers (President) 2017-2019