Darwin Mick

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Education

B.S.E. Mechanical Engineering   Graduation: May 2022
Ira. A. Fulton Schools of Engineering, Arizona State University   GPA: 3.65
Key Awards and Honors: ASU President's Award; Deans List; Barrett the Honors College

Technical Skills

- *Rapid Prototyping*: Precision Machine Training on an Endmill and Lathe, Laser Cutting, 3D-printing
- *Software*: SolidWorks, MATLAB, NX, Python, Gazebo, and ROS

Research and Experience

DREAMS Lab – Autonomous Exploration Systems Research   **August 2020 – Present**
Rapid Prototyping Specialist
- Aided in development and construction of drone deployable soil probes with autorotating propellers
- Designed and fabricated camera and sensor mounts for hex-rotor drones
- Consulted by team members to prototype design solutions with quick turn-around time

NASA - Jet Propulsion Laboratory   **January 2019 – August 2019**
Research Intern
- Barefoot Project: A machine learning task using a robotic testbed wheel to analyze terramechanics
    - Operated and refined project testbed procedures for data collection
    - Acted as liaison between the testbed hardware team and the project's machine learning customer
    - Designed and fabricated a braking mechanism for robotic testbed automation
    - Designed, assembled, and tested a new electronics assembly for the testbed
- Rendered a CAD storyboard of in-space telescope assembly presented to NASA's science directorate

BIRTH Lab - Space Mobility Research   **May 2018 – Present**
Undergraduate Researcher
- Implemented ROS to create a controller for a novel robotic excavation and mobility system
- Designed a functional air-tight testbed consisting of 150 parts within a $3500 budget
- Conducted trade studies to make objective design decisions and choose professional vendors
- Wrote proposals for novel rover ideas to procure funding from NASA for continued development

Relevant Coursework

Autonomous Exploration Systems   **January 2020 – May 2020**
- Implemented ROS and computer vision techniques to enable autonomous drone flight
- Built models in Gazebo to effectively simulate an autonomous system from start to finish
- Worked on multidisciplinary team to compete in the NSF Cyber-Physical Systems Challenge

Space Works - NASA Workforce Development   **January 2018 – December 2019**
- Wrote $10,000 new technology proposal that was submitted to Marshall Space Flight Center
- Designed and fabricated a craft capable of taking infrared pictures inside a heat chamber

Publications

- Thoesen, Andrew, et al. "Comparative performance of granular scaling laws for lightweight grouser wheels in sand and lunar simulant." Powder Technology (2020).
- Thoesen, Andrew, et al. "Revisiting Scaling Laws for Robotic Mobility in Granular Media." IEEE Robotics and Automation Letters 5.2 (2020): 1319-1325.
- Thoesen, Andrew, et al. "Granular scaling laws for helically driven dynamics." *Physical Review E* 102.3 (2020): 032902.