Burton Yale, III

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OBJECTIVE

Actively seeking Astrodynamics position where my experience and expertise can fully be utilized, as well as challenge and expand my current knowledge in the field of Mission Design and Navigation.

EDUCATION

Cal Poly Pomona   **Pomona, CA**   **Sep 2015 – Dec 2020**

Bachelor of Science, Aerospace Engineering (Core GPA: 3.75/4.0 | Overall GPA: 3.68/4.0)

Course Highlights: Spacecraft Flight Dynamics & Controls, Classical Controls, & Systems Engineering

EXPERIENCE

Cal Poly Pomona   **Pomona, CA**   **Feb 2019 – Jan 2020**

Research Assistant | JPL MALTO Project

- Adapted JPL's Mission Analysis Low Thrust Optimizer software for new JPL employees & undergraduates
- Created graphic user interface to guide the design of multi-leg interplanetary robotic and manned missions
- Collaborated with 6 other students, through Git, to develop, test, and deploy new features, and merge branches
- Deployed software to group of 100 students, where feedback was received and incorporated for JPL review

Panasonic Avionics   **Lake Forest, CA**   **Jun 2019 – Aug 2019**

Certification Engineering Intern

- Conducted Structural, Environmental, Smoke/Leak, and Cooling tests and identified failures
- Generated Flammability, Structural, Environmental, Smoke/Leak, and Cooling reports
- Coordinated with various engineering groups (Electrical & Mechanical Engineering) to help evaluate a new set of materials for Line Replacement Units (LRUs) that are compliant with FAA, EASA, and OEM requirements

PUBLICATIONS

Yale, B, Patel, R, Cabrera, J, & Nakhjiri, N Broad Trajectory Searches Using Monte Carlo Tree Search with the Inclusion of ΔV EGA Trajectories, presented at *AAS/AIAA 2020 Astrodynamics Specialist Conference*, 9–14 August

PROJECTS

Voyager III JPL RFP Response – Capstone Spacecraft Design Project   **Aug 2019 – May 2020**

- Managed mission concept proposal team of 6 students & assigned tasks via JIRA Agile project
- Request For Proposal from science team at JPL to send telescoping platform to 550 AU and image exoplanets
- Reviewed and negotiated system level requirements with RFP issuer to better meet mission needs
- Designed spacecraft through Preliminary Design and presented results to industry at NGC, LMC, & JPL
- Resolved team member disputes related to correct design decisions and conflicting information
- Evaluated space environment and engineered thermal & radiation sub-systems to protect sensitive elements
- Designed trajectory for high-risk competing architecture by converging in JPL MALTO optimizer

Broad Trajectory Searches Using Monte Carlo Tree Search (MCTS)   **Aug 2019 – Aug 2020**

- Created tool to find multi-planetary sequence trajectories to the outer planets using Monte Carlo Tree Search
- Published methods and findings at the *2020 AAS/AIAA Astrodynamics Specialists Conference* (AAS 20-686)
- Results used for initial guesses in higher fidelity optimizers, like JPL MALTO, to reduce convergence time
- Source code for program and findings available through GitHub (Link to repository)

Friends of Amateur Rocketry 1030 (FAR 1030) Competition Team   **Sep 2018 – Jun 2019**

- Achieved 1st place out of 4 teams, including San Diego State University and University of Central Florida, in competition by launching to 24,000 feet on a student build & researched rocket
- Engineered a mounting system for fins to withstand supersonic conditions throughout the competition flight

Ceres Sample Return   **Aug 2018 – Dec 2018**

- Designed trajectory to guide spacecraft from Earth to Ceres and return while meeting mission constraints
- Utilized MATLAB to find an optimal Earth-Mars-Ceres trajectory using porkchop plots & cost functions
- Visualized results with FreeFlyer for presentation to mission design specialists at JPL and class instructor

SKILLS

Coding Experience: MATLAB | Python (PyKep, SpiceyPy) | Julia | LaTeX | Git/GitHub
Software Experience: MS Office | JPL MALTO | NAIF SPICE | JIRA | SolidWorks | AGILE PLM
Engineering Skills: Software Design | Composites Manufacturing | Systems Engineering | Program Management