Pádraig Lysandrou

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EDUCATION

COLORADO BOULDER
PhD Student in Aerospace Engineering
Advised by Dr. Robert Braun
Research in GNC for EDL
MS by Fall '19

CORNELL UNIVERSITY
BS in Electrical and Computer Engineering May 2018
Minor: Aerospace & Archaeology

COURSEWORK

Adv Spacecraft Attitude Control
Vehicle Guidance Systems
Optimal Control and Estimation
Nonlinear Control Theory Linear System Theory
Feedback Control Systems
Attitude Dynamics and Control
Spaceflight Mechanics
Analytical Astrodynamics
Spacecraft Tech. Systems Arch.
Mathematical Physics
Digital Communication
Embedded Systems
Microelectronics

AWARDS

2018: Matthew Isakowitz Fellow
2017: Winner Caltech Space Challenge • MakeMIT Amazon Prize
2015: Hiram Percy Maxim Award
2014: Goldfarb Scholarship

HARDWARE

9 years of rapid prototyping with digital embedded systems and various peripherals

SOFTWARE

> 5000 lines:
Python • Matlab • LaTeX • C/C++
< 5000 lines:
Verilog • HTML • Assembly
Design:
Simulink • Fusion360 • EAGLEcad • Altium • Xpedition
Other:
SVN • Git

OTHER

Director Cornell Maker Lab:
Aug 2016 - May 2018
Extra Class Amateur Radio License

INDUSTRY

SPACEX | Associate Engineer - ADCS/GNC | Summer 2019: Redmond, WA
- Wrote GNC truth sim code for spacecraft actuators, dish guidance algorithms
- Designed Gateway Antenna Actuator Control Board
- Ran environmental test campaign for spacecraft ADCS subsystem

SPACEX | Associate Engineer - ADCS/GNC | Summer 2018: Redmond, WA
- Designed/built/tested flight software and hardware for star trackers
- Wrote/tested online star tracker debris/moon filter algorithm with flight data
- Performed exploratory star tracker redesign; magnetometer post mission analysis

BLUE ORIGIN | Avionics Intern | Summer 2017: Kent, WA
- SDR communication attitude dynamics simulator hardware/software
- New Glenn vehicle S-band embedded firmware

URSA SPACE SYSTEMS | Systems Engineer | Aug 2016 – Feb 2017: Ithaca, NY
- Avionics architecture for a constellation of synthetic aperture radar imaging satellites: held power, communication, and ADCS budgets into PDR

SPACEX | Avionics Intern | Dragon Avionics Summer 2016: Hawthorne, CA
- Built/tested TDRS reradiation system for Dragon 1/v2. Held CDR with SpaceX/JPL Deep Space Network. Deployed to launch sites and used on CRS11, soon for commercial crew systems.
- Built RF signal leveler tool for bit error testing. Tested on Dragon flight hardware.
- Wrote Dragon post-mission analysis scripts for CRS8 and CRS9

SPACEX | Launch Intern | Summer 2015: SLC39A/40 Cape Canaveral, FL
- Instrumentation, camera, fiber/pad comm systems for Falcon Heavy support. Implemented lightning warning system for SpaceX sites, replacing NASA system.

PERSONAL PROJECTS AND RESEARCH

PDP1 Lander: rocket-powered landing GNC test platform. | '18 - Present
6DOF Successive Convex Optimal Powered Descent Guidance Implementation | '18
LQR + EKF Control with Optimal Guidance for Quadrotors | '18
3DOF Convex Optimal Rocket Landing Algorithm Implementation| '17
From-scratch Mechanical keyboard with LaTeXbindings in firmware| '18
LR101 Lox/Rp1 rocket engine restoration | '18
3DOF Stewart Motion Platform Hardware and Firmware | '17
Quadrotor Flight Computer with PID rate Control| '17
Third Eye: A computer-vision text-to-speech device | '17
Infrared Imaging Agricultural Quadrotor | '15
Linear Magnetic Accelerator, 1.1kJ and 6.7kJ models | '13-'14

ARTIFICIAL GRAVITY CUBESAT | Avionics Lead | Dr. Daniel Selva
Aug 2016 – November 2017 | Ithaca, NY
- Performed full-system, in-house, avionics design to demonstrate controlled artificial gravity with a flexible tether

VIOLET NANOSATELLITE | Avionics Lead | Dr. Mason Peck
Aug 2014 – January 2017 | Cornell University Ithaca, NY
- Held 3 Pre-Integration Reviews and 1 Pre-Ship Review with Air Force Research Lab
- Brought full system avionics system to functioning state to be shipped to AFRL
- Worked on hardware and firmware for power, ADCS, CDH, T&C, GPS, and sensors
- Performed Simulated Communications, Charge Cycle, Sensor-suite Checkouts, and full Flat-Sat testing

PUBLICATIONS

Jun '17 – P. Lysandrou et al., Lunarport Concept - A Launch And Supply Station For Deep Space Missions, IAA Symposium, Torino, Italy (Conference)
Apr '17 – P. Lysandrou et al., 2017 Caltech Space Challenge - Lunarport: Lunar Extraction for Extraterrestrial Prospecting, AIAA Space Forum 2017, Orlando, FL (Conference)