Pádraig Lysandrou

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EDUCATION

UNIVERSITY OF COLORADO BOULDER
2019
MS in Aerospace Engineering
PhD student under Dr. Robert Braun
MS Thesis Defense Fall 2019
Passed PhD Prelim Exam Fall 2019

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

SOFTWARE

Proficient
C/C++ • Python • Matlab • Git • LaTeX
Survivable
HTML/CSS/Javascript
Design:
Fusion360 • EAGLE

HARDWARE

Circuit Design and PCB Layout
Embedded Systems Development
Mechanical Design
3D Printing

AWARDS

2018: Matthew Isakowitz Fellow
2017: Winner Caltech Space Challenge • MakeMIT Amazon Prize

OTHER

Rock Climbing
Film Photography
Personal Projects
Traveling

INDUSTRY

SPACEX | Guidance, Navigation, and Control Engineer II
02/2020 - Present | Los Angeles, CA
Lunar Starship and Mainline Starship

- Contributed to all mainline Starship orbital missions: simulation + Monte Carlo development, Raptor modeling, configuration automation, algorithm development, Ship flip and landing burn algorithm improvements
- Responsible Engineer for Lunar Landing guidance and control for HLS mission contract: wrote nearly entire guidance, control, and allocation algorithm stack from NRHO to Touchdown
- On-board realtime trajectory optimization routines for landing with scratch-built robust convex optimization solvers
- Manual control implementation, display, and inceptor software development for lunar landing phase
- Took part in vehicle hardware trades, layouts, and analysis
- Responsible engineer for $100M+ in NASA milestone products

Starshield

- Cradle-to-grave development of new program GNC: written and flown over a dozen new algorithms, demonstrated successful fault detection, recovery, on-orbit operations, data review. All among team of four
- Attitude control algorithms, orbit maintenance/maneuvering algorithms, state machine design and transition algorithms, device deployment and sequences, peripheral device control and FDIR
- Sole maintainer of orbit maneuvering and collision avoidance for satellite constellation until new team was created for ownership

SPACEX | Internship/Associate Positions | Summers 2015/16/18/19

- Launch instrumentation on Pad 39A, Dragon RF reradiation system for TDRS checkouts, Starlink Attitude Determination and Control avionics, Gateway antenna actuation circuit design

CORNELL SPACE SYSTEM DESIGN STUDIO Aug 2014 – Nov 2017 | Ithaca, NY

- Avionics Lead on Artificial Gravity Cubesat under Dr Daniel Selva; complete in-house avionics design to demonstrate controlled artificial gravity with a flexible tether.
- Avionics Lead on the Violet Nanosatellite Project for 2 years under Dr. Mason Peck.

PERSONAL PROJECTS AND RESEARCH

The NotForFlight Lander Project | '21 - Present

- A pressure-fed, liquid bipropellant, vertical-takeoff-vertical-landing testbed for novel guidance, navigation, and control routines.
- Scratch built film-cooled liquid rocket engine, electric Thrust Vector Control actuators, throttle valve, avionics, flight software stack, and much more
- Status: fluid systems and flight software are being tested, leading up to static fire in 2025

PUBLICATIONS

Jan '21 – P. Lysandrou, RD Braun, A 6-DoF Successive Convexification Powered Descent Guidance Implementation using Modified Rodrigues Parameters, AIAA Scitech 2021 Forum (Conference)