Paul Nadan

Aerospace and Robotics

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EDUCATION

OLIN COLLEGE OF ENGINEERING, Needham, MA *May 2020*

- BS in Mechanical Engineering
- Current GPA: 3.93
- Relevant coursework includes: Modeling and Simulation, Quantitative Engineering Analysis I and II, Fundamentals of Robotics, Mechanics of Solids and Structures, Partial Differential Equations, Small Satellite Laboratory, Transport Phenomena, Mechanical Design, Mechanical and Aerospace Systems, Controls, Design for Manufacturing, and Finite Element Analysis

EXPERIENCE

STUDENT RESEARCHER, Olin Robotics Lab, Olin College of Engineering *Sep 2018 – Present*

- Developing a six-legged robotic hexapod as an all-terrain exploratory rover for space missions
- Implementing algorithms to traverse rough terrain, ascend steep slopes, and autonomously navigate around obstacles
- Designing and fabricating robotic actuators and custom mounts for sensors and electronics

CO-CAPTAIN, Olin Aerial Robotics Team *Sep 2017 - Present*

- Launched a new student team at Olin College to enter the International Aerial Robotics Competition (IARC)
- Competing to solve unsolved research problems like GPS-denied navigation, swarm coordination, and human-robot interaction
- Designing control system architecture and writing code for localization, machine vision, voice control, and obstacle avoidance
- Attended the 2019 IARC Competition, where we demonstrated our system and received the award for Best Presentation

INTERN, NASA Jet Propulsion Laboratory *Summer 2018 & 2019*

- Led the mechanical design and fabrication of a novel folding hexacopter capable of ballistic deployment from a launch tube
- Overcame challenges including extreme launch loads, tight space constraints, vibration mitigation, and electrical integration
- Machined carbon fiber components, selected flight hardware, and wired up electronics to build a fully functional prototype
- Diagnosed problems and identified potential design improvements through rapid prototyping and field testing
- Designed and tested mechanisms for the predecessor, a ballistically launched quadcopter, during the preceding summer

STUDENT RESEARCHER, Chris Lee's Research Group, Olin College of Engineering *Sep 2017 - May 2019*

- Analyzed a bird-inspired perching landing gear system that allows drones to land on branches and rough terrain features
- Developed a hybrid empirical-numerical computational model of grasping forces and kinematics
- Conducted MATLAB simulations to optimize design parameters for future iterations of the landing gear mechanism
- Presented results at the ASME IMECE 2018 conference and published a paper in the ASME Journal of Mechanisms and Robotics

CO-FOUNDER, Fishbox Games LLC *Oct 2016 – Feb 2018*

- Co-developed *Project Airlock*, an innovative, space-themed social deduction game
- Founded the company Fishbox Games LLC
- Launched a successful Kickstarter crowdfunding campaign raising over $9,000
- Successfully coordinated manufacturing and shipping of games to backers

ENGINEERING INTERN, Eastman Chemical Company *Summer 2016 & 2017*

- Assisted effort to scale up new functional film manufacturing technologies for mass production
- Designed test equipment, operated prototype machines, and analyzed testing results to improve the manufacturing process
- Prepared chemical solutions and performed experiments to optimize film optical properties

SOFTWARE LEAD, FIRST Robotics Competition *Sep 2012 – May 2016*

- Founded a new FIRST Robotics Competition team at Carlmont High School
- Trained new team members in robot programming and coordinated the team's programmers to develop robot software
- Brainstormed and prototyped robot designs and decided on team policies, strategies, and design choices
- Wrote and tested robot code to accomplish challenging tasks under both autonomous and teleoperated control

SKILLS

- **Programming**: Java, Python, C++, MATLAB, and Mathematica
- **Fabrication**: CNC mill, lathe, band saw, drill press, 3D printer, laser cutter, and soldering
- **Computer-Aided Design and Finite Element Analysis**: SolidWorks, Fusion 360, OnShape, ANSYS, and COMSOL