Mark Dominic Yamarone

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Education

Stanford University, G.P.A: 3.86   September 2022 - March 2024
M.S. Aeronautical/Astronautical Engineering
Relevant Courses: Collaborative Robotics, Eng. Optimization, Decision Making, State Estimation, Adv. Feedback Control
Course Projects: Exploring Multi-Robot SLAM, Robot Collaboration Competition, Optimal Tire Strategy for F1

Northeastern University, G.P.A: 3.87   2015 - 2019
B.S. Mechanical Engineering & Minor in Electrical Engineering, Summa Cum Laude
Relevant Courses: Mechatronics, Systems & Controls, Linear Algebra & Diff Eq, Stochastic Processes
Activities: Aero NU, NU Mars Rover Team, Wireless Club, Pi Tau Sigma Honor Society, WRBB 104.9 FM

Skills

Applications: SOLIDWORKS, Simulink, LabVIEW, Microsoft Office, Creo, NX, ANSYS, Confluence, Unity
Programming: Python, C++, MatLab, HTML, Java, ROS, Machine Learning, Image Processing, Embedded Firmware
Manufacturing: Sheet Metal Design, CNC, Composite Materials, DFM, Soldering, PCB Design, Rapid Prototyping

Professional Experience

Planet Labs - Systems Engineering Intern - San Francisco, CA   June 2023 - December 2023
- Developed test procedure for a mission critical qualification test on our next-generation spacecraft.
- Simulated a Day-in-the-Life for a spacecraft prototype, encompassing all subsystems for requirements validation.

Elementary Robotics - Mechanical Engineer - Pasadena, CA   January 2020 - August 2022
- Developed next generation perception hardware with neural network inference accelerators.
- Developed peripheral drivers for Docker based, containerized robot operating system.
- Integrated neural-network optimized edge computers into production hardware solutions.
- Deployed and integrated custom inspection hardware to consumer, industrial, and food safe manufacturing environments.

MORSE Corp - Engineering Co-Op - Cambridge, MA   January 2019 - August 2019
- Designed structural components for unmanned aerial vehicles and their flight test equipment in Solidworks.
- Developed firmware to control precise timing of a release mechanism on a flight test apparatus.
- Made hardware testing methods more reliable and consistent with automated tests and redundant safety systems.

Endeavor Robotics - Systems Engineering Co-Op - Chelmsford, MA   January 2018 - June 2018
- Performed verification of robot performance in mobility, endurance, communications, and accessory interoperability.
- Collaborated with the Systems Engineering team on a proposal for a major development contract with the US Army.
- Designed a custom test instrument to measure and record robot ground speed with Python-based software.

Hasbro Inc. - Engineering Co-Op, Integrated Play - Pawtucket, RI   January 2017 - June 2017
- Engineered new play experiences for animatronic, connected toys using advanced technologies like voice interaction.
- Prototyped novel game VR interaction concept using Unity and Google Cardboard Android app.
- Created mock ups of mechanisms for future animatronic toys using both machined and 3D printed parts.

Engineering Activities

Structures and Composites Laboratory - Graduate Researcher   2023 - 2024
- Researching Physics Informed Neural Networks for modeling the aerodynamic and structural responses of a wing in flight.
- Developing and training neural networks to predict complex 3D flows using Pytorch and Nvidia Modulus framework.

Avatar XPRIZE Arm Capstone Project   Fall 2019
- In a team of 5 students, designed and prototyped an anthropomorphic robotic arm and haptic exoskeleton controller.
- Developed a compact brushless motor driver for quasi-direct drive applications with precise torque control.
- Wrote motor controller firmware including Field-Oriented Control, serial communications over RS485, and implementing FreeRTOS on an ARM Cortex microcontroller.

Northeastern University Mars Rover Team - Systems Engineering Lead   2018 - 2019
- Designed a remotely operated rover for a simulated Mars environment to compete in the University Rover Challenge.
- Managed the mechanical, electrical, and software design and integration of 4 subsystems.
- Integrated NVIDIA Jetson embedded computer to interface with custom peripheral sensors and actuator controllers.