

Patrick Youssef

Computer Science Graduate Student

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Skills

Programming Python - Bash - MATLAB - HTML/CSS/JavaScript - C++ - R

Libraries & Frameworks NumPy - OpenCV - PyTorch - Matplotlib/Bokeh - SciKit Suite - Gatsby

Experience

SpaceX

Hawthorne, California

Guidance, Navigation, & Control Software Intern

Jun. 2019 - Aug. 2019

- Overhauled flight configuration pipeline in Python to allow launch-to-land simulations that helped finalize crewed flight approval
- Refined vehicle constraint checking tools to reduce configuration edit time by nearly 10x using a YAML parser
- Developed Python scripts to generate multi-simulation statistics that provided engineers insight into vehicle performance

Ground Support Equipment Intern

Mar. 2019 - Jun. 2019

- Developed computer vision software in Python/C++ to automate patch testing saving hours of manual work
- Optimized control gains of large scale pressure and liquid nitrogen controllers to aid in safe testing of Crew Dragon
- Led the creation of a safety system to automatically restrict high-pressure supply air in the event of an anomaly

HyperXite - HyperLoop Competition Team

Irvine, California

Systems Engineering Lead

May. 2018 - Mar. 2020

- Managed top-level design decisions to optimize our timeline, budget, and performance for the SpaceX HyperLoop competition
- Developed a Python systems model of the pod's propulsion system to optimize component selection and design choices

Matlab For Engineering Computation Course

Irvine, California

Undergraduate Teaching Assistant

Sep. 2017 - Dec. 2019

- Adjusted course curriculum to better reflect the needs of industry and immediate academic pursuits
- Held office hours twice a week to improve staff availability and answer questions in a group setting
- Developed problems for real-time class usage in pursuit of a more dynamic and engaging lecture

FIRST Robotics Team 3476

Irvine, California

Technical Mentor - Systems Design

Jun. 2017 - Mar. 2020

- Guided systems design and interdisciplinary integration leading to the least modified robot in the team's history
- Developed, alongside the high schoolers, a computer vision system running on a Jetson TX1 to track goals and guide the robot

Research

UCI Rehabilitative Robotics Research Lab

Irvine, California

Undergraduate Researcher

May. 2018 - Sep. 2018

- Developed admittance/impedance controllers to emulate dynamic environments for Duchenne's rehabilitation research
- Collaborated with our post-doc, Joan Lobo-Prat, on the real-time implementation of the control system in Simulink Real Time
- Redesigned patient hand interface with embedded force sensors to reduce sensor noise 8x

Projects

- **Completed:** Semantic Road Segmentation using U-Net, Image Colorization Net, Particle Filter SLAM, Visual Inertial SLAM
- **In Progress:** Single Shot MultiBox Detector

Education

University of California, San Diego

San Diego, California

M.S. Computer Science and Engineering - AI Depth

Sep. 2020 - Mar. 2022

- Cumulative GPA: 3.9
- Courses: Principles of AI, Mathematics for Robotics, Intro Computer Vision, Sensing and Estimation for Robotics, Visual Learning, Advanced Computer Vision, Recommender Systems, and Intro to Robotics

University of California, Irvine

Irvine, California

B.S. Mechanical Engineering

Sep. 2016 - Mar. 2020

- Cumulative GPA: 3.5 & Engineering GPA: 3.6