Patrick Youssef

Computer Science Graduate Student

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Skills

Languages & Tools	Python - Git - MATLAB - Linux - Bash - C++ - HTML/CSS/JavaScript - LaTeX
Libraries & Frameworks	NumPy - OpenCV - PyTorch - Matplotib/Bokeh - SciKit Suite - Gatsby
Applied Math	Numerical Methods - Monte Carlo Simulations - Control Theory

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

Education

University of California, San Diego *San Diego, California*

M.S. Computer Science and Engineering *Sep. 2020 - Jun. 2022*

- Cumulative GPA: 3.9

University of California, Irvine *Irvine, California*

B.S. Mechanical Engineering *Sep. 2016 - Mar. 2020*

- Cumulative GPA: 3.5 & Engineering GPA: 3.6

Interests

⬙ Machine Learning | 🚗 Autonomous Vehicles | 👁 Computer Vision | ⚙ Simulation | 🚀 Spaceflight