Patrick Youssef

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Education

UC San Diego - Master of Science, Computer Science   *Mar. 2022*
- Deep Learning and Robotics Focus; GPA 3.95/4.0
- **Relevant Coursework:** Graduate Algorithms, Computer Networks, Recommender Systems & Web Mining, Advanced Computer Vision, Deep Visual Learning, Robotic State Estimation, Probabilistic Reasoning, Ethics of Data Science

UC Irvine - Bachelor of Science, Mechanical Engineering   *Mar. 2020*

Work Experience

UC Irvine - Teaching Assistant   *Sep. 2017 – Dec. 2019*
- Served as a teaching assistant for the MATLAB programming course taught to all mechanical engineering students
- Conducted biweekly office hours, wrote/proctored exams, and revised assignments over 3 course terms
- Guided over 450 students through course material and challenge problems with an average evaluation of 3.81/4.0

SpaceX - Software Engineering Intern   *Jun. 2019 – Aug. 2019*
- Overhauled vehicle configuration pipeline to enable full launch-to-land simulations and reduce edit time by 70%
- Automated updating 500+ legacy configurations to utilize the new structure while cleaning out deprecated sims
- Implemented Python post-simulation statistics scripts used to validate crew dragon for human flight with NASA

SpaceX - Vehicle Engineering Intern   *Mar. 2019 – Jun. 2019*
- Developed computer vision software to automate critical vehicle testing with 50% fewer errors in 20% the time

UC Irvine Biorobotics Lab - Researcher – Controls Software   *May. 2018 - Sep. 2018*
- Implemented admittance & impedance control using Simulink realtime for Duchenne muscular dystrophy rehabilitation

Leadership Experience

HyperXite HyperLoop Competition Team - Systems & Software Lead   *May. 2018 – Mar. 2020*
- Managed over 30 members in high-level vehicle design, on-vehicle software, and development of high-fidelity simulations
- Corresponded with SpaceX engineers to ensure compliance/safety in critical elements of the high-level vehicle design

FIRST Robotics Team 3476 - Technical Mentor   *Jun. 2017 - Mar. 2020*
- Coached over 20 robotics students through computer vision, controls, and mechanical design on a world-class robot

Projects

- **PatrickYoussef.com:** Portfolio, blog, and general home on the web for all things about me
- **NeRF (In Progress):** Distributed training of neural scene rendering from scratch on custom datasets
- **Roadway Segmentation:** U-Net with transfer learning for semantic segmentation on CityScapes
- **Deep Image Colorization:** Self-supervised grayscale image colorization using pre-trained and custom feature fusion
- **Neural Collaborative Filtering:** Ratings prediction for (user, item) pairs using the NeuMF deep learning model
- **N-Body Simulator:** Orbital body simulation with an RK4 integrator and novel combinatorics for fast acceleration updates

Presentations

- **Internships 101:** Engaged with over 50 UC Irvine students on how to network effectively to land a dream internship
- **Effective Engineering:** Taught general steps to produce effective engineering solutions to over 75 robotics students
- **Demystifying DP:** Presented a simple method for approaching dynamic programming problems to over 15 SWEs

Skills

- **Programming:** Python, JavaScript, HTML, CSS, MATLAB, R, C++
- **Technologies:** NumPy, MatplotLib, Pandas, PyTorch, OpenCV, Keras, TensorFlow, Gatsby, Git, Linux
- **First Principles:** Machine Learning, Numerical Methods, Linear Algebra, Optimization, Algorithms