Patrick Youssef

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Education

University of California, San Diego — La Jolla, CA
Master of Science, Computer Science, AI Focus; GPA: 3.95 — *Sep. 2020 – Mar. 2022*

University of California, Irvine — Irvine, CA
Bachelor of Science, Mechanical Engineering; GPA: 3.5 — *Sep. 2016 – Mar. 2020*

Work Experience

UC Irvine — Irvine, CA
Teaching Assistant (Engineering Computations in MATLAB) — *Sep. 2017 – Dec. 2019*

- Revised assignments, proctored exams, helped in writing exams, and conducted biweekly office hours over 3 course terms
- Guided over 450 students through course material and challenge problems with an average evaluation of 3.81/4.0

SpaceX — Hawthorne, CA
Software Engineering Intern (Guidance, Navigation, & Control) — *Jun. 2019 – Aug. 2019*

- Overhauled simulation configuration to enable full launch-to-land simulations and reduce configuration 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 — Hawthorne, CA
Vehicle Engineering Intern (Dragon Test Equipment) — *Mar. 2019 – Jun. 2019*

- Developed computer vision software to automate critical testing with 50% fewer errors and in 20% the time versus prior
- Led the creation of a safety system that isolates high-pressure air in 10 labs to reduce danger during an accident

Other Experience

HyperXite - HyperLoop Competition Team — Irvine, CA
Engineering Lead (Systems, Software, & Simulation) — *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 — Irvine, CA
Technical Mentor (Vision & Design) — *Jun. 2017 - Mar. 2020*

- Coached over 20 robotics students through computer vision, controls, and mechanical design on a world-class robot

JMS Materials Research Group — Irvine, CA
Researcher (Data Analysis) — *May. 2017 - Sep. 2017*

- Developed data processing and visualization tools in MATLAB to decrease researchers' time expense and error rates

Projects

- **Roadway Segmentation:** Implemented a 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:** Predicted ratings for (user, item) pairs using the NeuMF deep learning model
- **N-Body Simulator:** Simulated orbital bodies with an RK4 integrator and novel combinatorics for fast acceleration updates
- **Other Projects:** Particle Filter SLAM, PatrickYoussef.com, Human Activity Classification, Online Store Stock Checker

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