

# Nathan Bernardo

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## Education

**University of California, Irvine**, Irvine, CA  
Bachelor in Electrical Engineering  
GPA: 3.0

June 2021

## Experience

### Resilient Cyber-Physical Systems Lab

*Undergraduate Researcher*

September 2020 - Present

- Revamp the neural network controller to achieve safe training using proximal policy optimization.
- Apply policy-gradient algorithms to guarantee safety during the learning and execution phase.
- Integrated methods in OpenAI's Safety Gym simulator for performance measure and debugging.

### Ad Launcher

*Software Engineer*

June 2020 - July 2020

- Created a subscription-based payment system using Braintree's API, ensuring payment validation between non-paying and paying customers.
- Built backend using Django for storing customers' payment submission, transaction, and subscription in Braintree.
- Designed drop-in UI for online transactions with Javascript and HTML.

## Projects

### Autonomous Search and Rescue Drone

*Machine Learning Engineer*

June 2020 - Present

- Integrated YOLOv3 algorithm to detect objects through the drone's camera system in real-time.
- Trained siamese neural network for facial recognition, ensuring the targeted human is recognized during search and rescue missions in complex environments.
- Measured performance of algorithms and debugged code with Airsim.

### UCI Hyperxite - SpaceX Hyperloop Competition

*Systems Engineer*

April 2020 - Present

- Led a team of 4 students in the design of the power and control system to conform to SpaceX rules.
- Ensured electronics are powering required components for braking and propelling, and data is being transmitted/received through Raspberry Pi and sensors.

*Power Systems Engineer*

October 2019 - March 2020

- Created PCB with Altium to improve low-voltage system wiring for integrated circuits and communication between microcontrollers, sensors, and actuators involved.
- Guaranteed voltage protection in high voltage system with DC contactors and relays.
- Managed battery health of high voltage batteries with battery management system.

## Technical Skills

**Programming Languages:** Python, Javascript, HTML, CSS

**Frameworks:** Tensorflow, Keras, Django

**Tools:** Sci-Kit, Numpy, Matplotlib, Pandas, Linux, Git, Simulators (Airsim, Gazebo), ROS, PCB design (Altium, KiCad)

**Methodologies:** Test Driven Development (TDD)

## Extracurricular Activities

### UCI IEEE

*President*

March 2020 - Present

- Spearheaded statewide collaboration with region 6 IEEE branches; aimed to help students gain valuable engineering skills through a virtual environment.
- Led planning and organization of machine learning workshops with community colleges.

*External Relations*

October 2019 - May 2020

- Coordinated technical workshops in collaboration with companies (e.g. Digikey, Keysight, Matlab, and TI) to help enhance the students' technical skills.