

James McDougall

Computer Engineer – Networks, Systems, Machine Learning

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Education

B.S. in Computer Engineering, University of California, San Diego. Expected June 2021 (GPA: ~3.5/4.0)

Experience

Software Engineering Intern at [Centauri Corp](#) using **Python, PyTorch**

June – September 2020

- Developed a machine learning pipeline for object detection using YOLO (You Only Look Once) and PyTorch framework
- Used Python to create tools for drawing bounding boxes around objects in images, training new models, and assigning labels
- Trained a model to detect grounded airplanes with greater than 99% accuracy

Software Engineering Intern at [San Diego Supercomputer Center](#) using **Bash, Jupyter, Slurm**

September 2019-Present

- Designed a secure Jupyter Notebook service on a compute cluster using a reverse proxy server
- Wrote a Bash script to interact with the proxy server and submit a job to the supercomputer's scheduler
- Wrote service documentation using Sphinx and Read-the-Docs

Software Engineering Intern at [Cirrascle Cloud Services](#) using **Docker, Kubernetes, Tensorflow**

June-August 2019

- Designed an ETL diagram using Apache Nifi for transferring data from S3 buckets to local storage
- Created a Docker container to start a Jupyter Notebook to allow users to efficiently test inferencing accuracy of different Tensorflow models on an image directory
- Wrote a script which took as input a Tensorflow model directory and used that model to detect humans in a driving simulation to control the direction of a car
- Created a Kubernetes pod spec to start an eight GPU cluster for object detection model training
- Created a cluster management tool for reporting server power and temperature using Redfish API and Python, ported to a dashboard API to display graphs of server usage; delivered to client

Computer Science Tutor at [UCSD CSE Department](#)

January 2019-June 2019

- Undergraduate TA for Advanced Data Structures in C++ and tutor training courses
- Used C++11 debugging skills to assist student in the lab; explained data structures and algorithms

Projects

[ClubHouse](#) using **JavaScript, Flask, Docker, Heroku, Postgres**

- Using a Flask server hosted on Heroku, implemented an API in Python for adding events to Postgres database, verifying user status, and getting images
- Templated web components in HTML for login page, new user, dashboard, and club pages
- Using Fetch API and JQuery, implemented page logic using GET and POST requests

[Security Camera](#) using **Flask, Nginx**

- Using a Flask server on a Raspberry Pi and an Nginx to proxy through my router, created a video stream and exposed it through my personal domain so I can view my front door from anywhere

[Ultrasonic Sensing Robot](#) using **Python, Raspberry Pi**

- Using Python and a Raspberry Pi, manipulated motors to change direction based on ultrasonic sensor data

Skills

Tech Stack: Python, C/C++, Java, JavaScript, React, Docker, Kubernetes, Flask, Bash, Git

Clubs: Late Night Hacks, AlchemyX Startups

Awards/Other: Eagle Scout, Resident Assistant

