

# James McDougall

Computer Engineer – Networks, Systems, and Blockchain Enthusiast

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## Education

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

## Experience

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**Software Development Intern** at the **San Diego Supercomputer Center** using **Bash, Jupyter, Slurm**

*September 2019-Present*

- Using Bash, created a program to allow supercomputer users to start Jupyter notebooks over an encrypted connection in Slurm job scheduler.

**Software Engineering Intern** at **Cirrascale Cloud Services** using **Docker, Kubernetes, Tensorflow**

*June-August 2019*

- Designed an ETL (Extract, Transform, Load) diagram using Apache Nifi for transferring data from S3 buckets to local cloud storage.
- Created a Docker container which starts a headless Jupyter notebook on a GPU and allows users to efficiently test inferencing accuracy of different Tensorflow models on images.
- Wrote a script which takes a Tensorflow model directory as input and uses the model to detect humans in driving simulation frames and control the direction of the car.
- Created a Kubernetes pod spec that starts an eight GPU cluster to train an object detection model on an Nvidia DGX when given a configuration file and a directory of images.
- Created a power management tool for reporting server power and temperature using Redfish API and Python, displaying graphs of server usage on an Emoncms dashboard; delivered to client.

**Computer Science Tutor** at the **UCSD CSE department** using **C++**

*January 2019-June 2019*

- Undergraduate TA for CSE 100 (Advanced Data Structures in C++), CSE 95 (CSE Tutor Training).
- Used C++11 debugging skills to assist students in the lab; explained data structures and algorithms.

**Data Analyst** at the **UCSD CSE department** using **Pandas, Jupyter**

*August 2018*

- Performed statistical analyses (t and z tests) on data from a computer science education research project in a Jupyter Notebook using Python, Pandas and organized results in a research paper.

## Projects

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**ClubHouse** using **JavaScript, Flask, Docker, Heroku, Postgres**

*September 2019*

- 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 page, dashboard, and individual club pages.
- Using Fetch and JQuery in JavaScript, implemented page logic using including GET and POST requests in concert with page updates.

**Security Camera** using **Flask, Nginx**

*December 2019*

- Using Docker Compose, implemented a reverse proxy using Nginx with a Flask server to send a video stream to a Heroku site for remote viewing.

**Ultrasonic Sensing Robot (MAUSR)** using **Python, Raspberry Pi**

*August 2017*

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

## Skills

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**Tech Stack:** Python, C/C++, Java, JavaScript, ReactJS, Kubernetes, Docker, Flask, Postgres, Bash, Git

**Clubs:** Late Night Hacks, AlchemyX Startups

**Awards:** Eagle Scout