Daniel George

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# Summary

* Second year Computer Engineering student interested in Software Engineering, Machine Learning, and Computer Vision
* Explored machine learning by writing a neural network for handwritten number classification, using only NumPy
* Experienced with computer vision and robot programming as an intern at a UCSD research lab

# Education

**University of California, San Diego Projected Graduation: June 2023**

Bachelor of Science in Computer Engineering GPA: 3.98

Relevant Completed Coursework: Data Structures and Algorithms, Software Tools and Techniques, Multivariable Calculus, Linear Algebra, Differential Equations, Discrete Math, Physics (Mechanics, Electricity and Magnetism, Fluids, Waves, Optics)

Current Coursework: Computer Architecture, Analog Design, Engineering Statistics, Mathematics for Algorithms and Systems

# Skills

* Python
* Java
* C/C++
* Bash/Unix
* Git
* HTML, CSS and JavaScript
* Eagle EDA for PCB design
* Mechanical design using Solidworks for fabrication on laser cutter, CNC Mill/Router, and 3D printer

# Work Experience

**Research Intern @ UCSD Advanced Robotics and Controls Lab Oct 2020 – Present, San Diego, CA**

* **CT Tracking** – developed an algorithm using Python to find the position and orientation of markers in a CT scan using the CT image. Thresholded pixels by brightness, converted pixels into a point cloud, utilized Marching Cubes to create surface meshes, and RANSAC to align surface mesh points
* **Lung Phantom** - created a breathing lung phantom to mimic a human in a robotic, CT-guided needle biopsy
  + Programmed 1-DOF robotic actuator using Python and SocketCAN interface to poke silicone samples with a needle attached to a force-torque sensor to verify tissue mechanical properties.
  + Wrote code in Python to read analog signals from the sensor using a National Instruments Digital Acquisition system, convert signals to forces, and log data during the poking routine

**EE/Software Intern @ Medical Robotics Startup Jun-Aug 2019, Redwood City, CA**

* Created wiring schematic for motor control, which was used in working robot prototype
* Designed and built constant [Voltage LED driver circuit](https://drive.google.com/open?id=1Pn8i5gw39Lxq_b8LXLnbMQYzqQCrJJ4y) to analyze LED brightness and Color to find the optimal one for the robot
* Coded software to display pose of 7DOF Robot arm using API in C++

# Projects

* **Neural Networks** – wrote a [feedforward neural network](https://github.com/dangeo314/neural-networks) in Python to classify handwritten numbers from the MNIST database to ~95% accuracy, using only NumPy as a dependency
* **Rideshare Data Analysis** – analyzed a dataset of millions of rideshare rides in Chicago to identify locations of highest fare trips, cleaned and filtered data using SQL and Python Pandas
* **Custom PC for running Solidworks** – built a custom PC specialized for running the computer aided design application Solidworks, featuring a Nvidia Quadro P2000, Intel i7 9700K, and 32GB RAM. Researched, selected, and assembled compatible parts optimal for this application

# Extracurricular Involvement

**Robotics** [**Team 254**](https://www.team254.com/leaders/) **Technical Lead and Competition/Operations Director 2016-20, San Jose, CA**

* Led high school FRC robotics team in electrical and mechanical design
* Hosted workshops for team, teaching physics of electricity, brushless motors, encoders, sensors, and CAN protocol
* Contributed to 2 world championship wins and 1 world championship runner-up

# Achievements

**Science Department Award for Excellence in Physics (2020) –**  TA for AP Physics 1 and AP Physics C: set up labs, graded lab reports, and helped peers during office hours.

**IEEE HKN Member** – Member of engineering honor society, chosen for academic and professional achievement