Daniel George

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# Introduction

* Second year Computer Engineering student interested in Software Engineering, Machine Learning, and Computer Vision
* Experienced with robot programming, computer vision and optimization techniques as a research intern at a robotics lab
* Explored machine learning by writing a neural network and gradient descent from scratch using only NumPy
* Looking to bring the above experiences and enthusiasm to a Summer 2022 Internship

# Education

University of California, San Diego – projected graduation June 2023

Bachelor of Science in Computer Engineering

GPA: 4.0

Relevant Completed Coursework: Data Structures and Algorithms, Software Tools and Techniques, Multivariable Calculus, Linear Algebra, Differential Equations, Discrete Math

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

# Skills

* Java
* JUnit
* Python
* 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)**

* **CT Tracking** – developed an algorithm to find the position and orientation of markers in a CT scan using the CT image, utilizing numerous computer vision techniques. Finding pose is an important first step for planning robotic surgery.
* **Lung Phantom** - created a breathing lung phantom to mimic a human in a robotic, CT-guided needle biopsy
  + Selected and manufactured materials that simulate human tissue when scanned in a CT scan or poked with a needle
  + Programmed 1-DOF robotic actuator to poke silicone samples with a needle attached to a force-torque sensor to verify each sample’s mechanical properties. Wrote code to read analog signals from the sensor, 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++

# Personal Projects

* **Neural Networks** – wrote a [feedforward neural network](https://github.com/dangeo314/neural-networks) using gradient descent from scratch to classify handwritten numbers from the MNIST database to ~95% accuracy, using only NumPy as a dependency
* **Home Amplifier and Speaker Set** – built a high-fidelity home audio system that involved circuit assembly, transistor circuit design, crossover circuit design (high and low pass filters) and specialized types of capacitors for low noise applications

# Extracurricular Involvement

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

* 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

**Arduino Club (2019-20)** – Founding member and Vice president of school Arduino Club. Used Arduino to create a new, more robust (higher range/reliability) control system for robotics team’s T-shirt Cannon robot, *Shockwave*.

# Awards

**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