Sam Kaplan

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WORK EXPERIENCE

APRIL 2020 - PRESENT

Olin Rocketry Team
Avionics Subteam: Sensing Lead

Currently designing the sensing board of our flight computer so that our environmental sensors (IMU, accelerometer, GPS, and barometer) can properly store and send data to the micro-controller. Also implementing a Kalman filter to ensure that we can open our parachute precisely at apogee. The overall team goal is to send our rocket to 10,000ft for the Intercollegiate Rocket Engineering Competition, at Spaceport America, NM

JUNE 2018 - DECEMBER 2018

Uncharted Power
Product Development Associate

Assisted with product design of footfall based renewable energy device meant to replace city sidewalks. Prototyped Arduino and Raspberry PI based circuits (electrical debugging and firmware) for a distributed computing platform.

MARCH 2019 - JULY 2019

Sylvan Learning
Tutor

Tutored children from ages 6 to 14 in English, math, engineering (Lego Robotics), and computer science. Conducted fun activities for special school break sessions, such as making slime, carnival day, and magic card tricks

PROJECTS

Finite State Controller

First class project for Computational Robotics. Used ROS, the rospy library, object oriented code structure, LIDAR perception, reactive control, and proportional control to implement six distinct robot behavior routines that seamlessly transition between each other.

Gradient Descent Path Finding

Wrote MATLAB code to guide a (simulated) robot vacuum around an obstacle course by creating sources for obstacles and sinks for the target area. Used MATLAB's ROS Toolbox library to implement a basic gradient descent algorithm, getting points from LIDAR data to act as repelling sources.

Gap Year Project

First stage of an independent engineering project to create an autonomous following drone using computer vision. Implemented OpenCV on a Raspberry Pi and created a Python based to serial interface for Arduino-PI communication.

EDUCATION

2019 - PRESENT **Bachelor of Science**
Robotics Engineering
Olin College of Engineering
GPA: 4.0

SKILLS

PROGRAMMING	ROS, Python, MATLAB, Linux, Git
MECHANICAL	Fusion 360, 3D printing, woodworking
ELECTRONIC	KiCad, LTSpice, Arduino, Raspberry Pi

AWARDS

2019 **50 % merit scholarship over 4 years**
Olin College

2016 **3rd Place - Novice Category**
Lockheed Martin Codequest

RELEVANT COURSEWORK

Introduction to Computational Robotics
Applied understanding of computer vision, machine learning, reinforcement learning, control theory, path planning and mapping/localization in the context of a computationally focused approach to robotics

Introduction to Microelectronic Circuits
Learned operation of circuit elements, fundamental circuit laws, and circuit analysis techniques. Covered transistor-level design with regard to modern integrated-circuit technology and design and operation of the basic analog integrated circuits, including single-transistor amplifier stages, current mirrors, CAS codes, differential pairs, and single-stage operational amplifiers.

Quantitative Engineering Analysis
Project based general math, science and engineering course. Covered statics and multi-variable calculus in the context of boat design, linear algebra in the context of facial recognition software, and mechanics and controls in the context of mobile robots. Also focused on frequency domain analysis of signals, dynamics in two and three dimensions, and basic controls including transfer functions, proportional, and proportional-differential control.