ALEXANDER KRISTOFFERSEN

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EDUCATION

University of California, Berkeley May 2022
B.S. in Electrical Engineering & Computer Science GPA: 3.925
Relevant Coursework:
Computer Programs, Information Devices and Systems I/II, Data Structures and Algorithms, Electromagnetic Physics, Multivariable Calculus, Linear Algebra, Discrete Mathematics and Probability, Computer Architecture

EXPERIENCE

Robotics at Berkeley August 2019 - Present
Member, Self-Driving Car Simulator Team *Berkeley, CA*

· Implementing standard reinforcement learning algorithms to learn driving behavior with OpenAI Gym.
· Programming an efficient training data pre-processing algorithm from Unity simulation and OpenCV, isolating lane lines in a high-variance data set.

Space Technologies at Cal (STAC) August 2019 - Present
Software Developer, High Altitude Balloon Team *Berkeley, CA*

· Designing the flight code for HAB-IV, the 4^{th} generation balloon, in order to avoid dangerous or unreachable landing spots through in-flight self-corrections by manipulation of parachute wires.
· Integrating sensor data, including IMU and GPS, and servo control in C++ on a low-powered system.

PROJECTS

Stegasaurus: Steganographic Private Messaging Tool October 2019 - Present

· Created algorithm and web server implementation for encoding large amounts of encrypted text data into images with minimal visual trace, winning 2nd Place at CalHacks 6.0 out of over 2,000 participants.
· Using Discrete Cosine Transform (DCT) and redundancy measures, can protect encrypted messages of over 7,000 characters in ≈500p images resilient to over 60% compression in both PNGs and JPEGs.

Fourier Series Educational Visualizer December 2018 - February 2019

· Developed a command-line Java program and IPython educational demo for the visualization of the Fourier Series, which approximates a function as a sum of sinusoids.
· Uses a linked-list of circles to draw each circle as it rotates about the other, and outputs to approximate function to an animated continuous graph.

Interactive World-Builder Engine April 2019 - May 2019

· Designed a Java-based pseudo-randomized 2D dungeon maker with distinctive walls, turning hallways, and torches. Allows for saving/loading of previous runs and seeds.
· Added two-player user controls and a dynamic light renderer to create a fun, playable game.

TECHNICAL STRENGTHS

Programming Languages: Java, Python, C, C++ (mostly with Arduino), Scheme (Lisp)
Physical skills: Breadboarding, Soldering, Circuit Design, Prototyping, Public Speaking