ALEXANDER KRISTOFFERSEN

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EDUCATION

University of California, Berkeley August 2018 - Exp. May 2022
B.S. in Electrical Engineering & Computer Science GPA: 3.938
Relevant Coursework:
Information Devices and Systems I/II, Data Structures and Algorithms, Discrete Mathematics and Probability, Computer Architecture, Efficient Algorithms and Computability, Signals and Systems, Intro to AI, Operating Systems and System Programming, Optimization Models in Engineering

EXPERIENCE

Corelight Inc. May 2020 - August 2020
Summer Research Intern *Remote / San Francisco, CA*

- Worked under Dr. Vern Paxson researching experimental network analysis techniques within Corelight's Research Team, developing proprietary plugins for its core open source project, Zeek.
- Built tools to parse/clean large volumes of network data (over 100 Gigabytes per file) under multiple protocols with minimal state storage and memory overhead. (C/C++, Python, Zeek Language, Go)

Berkeley RoboMaster August 2019 - May 2020
Member, Perception Team *Berkeley, CA*

- University team for annual ICRA RoboMaster AI Challenge, an international competition to develop the autonomous system to defeat another robot in ping pong ball projectile combat.
- Developed a training-data pipeline from raw video to cropped and filtered data for use in convolutional neural network for enemy robot detection (OpenCV, NumPy, SciPy, C++, Python).

Space Technologies at Cal (STAC) August 2019 - Present
Team Lead, 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, ground and satellite communications, and servo control in C++ on a low-power embedded system.

PROJECTS

Stegasaurus: Steganographic Private Messaging Tool October 2019 - May 2020

- 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.
- Utilized the Discrete Cosine Transform (DCT) and redundancy measures, to 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 as taught in EECS 16A, which approximates a function as a sum of sinusoids.
- Implemented with 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.

TECHNICAL STRENGTHS

Languages/Skills: Java, Python, C++, C, SQL, Assembly (RISC-V, x86), Unit Testing
Tools: Vim, VSCode, Debuggers (Valgrind, GDB), Jupyter Notebook, Git, Arduino, Unix, PyTorch