MARK GOLDWATER

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EDUCATION

OLIN COLLEGE OF ENGINEERING **MAY 2021**

BACHELOR OF SCIENCE IN ELECTRICAL AND COMPUTER ENGINEERING

Recipient of four year half-tuition merit scholarship valued at $100,800

GPA: 3.97/4.00

Relevant Coursework (through Spring 2019): Computer Architecture, Analog and Digital Communications, Microelectronic Circuits, Data Structures and Algorithms, Quantitative Engineering Analysis (Multivariable Calculus, Linear Algebra, Signals and Systems, Mechanics), Software Design, Discrete Mathematics, Bayesian Statistics.

SKILLS

- Python, Java, C++, MATLAB, C, Verilog, JavaScript, Ruby on Rails, Git.
- Basic CAD, 3D printer, basic machine shop tools.

EXPERIENCE

MIT LINCOLN LABORATORY **SUMMER RESEARCH PROGRAM INTERN** **MAY – AUG 2019**

- Developed a physical system to calibrate an infrared camera over multiple settings for use in a communications system testbed.
- Converted from pixel values of the camera's focal plane array to the power of the incident infrared beam.
- Utilized C/C++ and multi-threading to write control code for the hardware used in the system, Python for creating hardware emulators for testing, and MATLAB for image processing.
- Developed signal processing algorithm in MATLAB to detect non-functioning camera pixels.

ANALOG CIRCUITS **TEACHING ASSISTANT** **AUG – DEC 2018**

- Assisted students with the theory of filter design and circuit analysis.
- Attended a class period twice a week to grade students' lab reports and problem sets as well as provide help with the current lab.
- Served as a resource outside of class for students who needed on-on-one help with the material.

TRACK INFORMATION, INC. **SOFTWARE ENGINEER INTERN** **JUN – AUG 2018**

- Designed and prototyped RESTful API for a mobile app to track a user's health statistics using React Native in JavaScript as well as Ruby on Rails.
- Engineered the app's back-end dataflow in order to easily interface with third party APIs.
- App is now used as a display of the product to investors.

PROJECTS

FACIAL RECOGNITION SOFTWARE MARCH 2017

Implemented the Eigenfaces and Fisherfaces facial recognition algorithms in MATLAB in a computationally efficient manner. Achieved 95% accuracy on a dataset of 50 individuals.

BRAILLE SHEET MUSIC PRINTER OCTOBER - DECEMBER 2018

Designed and built device that can convert digitized music into braille sheet music and print it. Personally, I focused on the design of the electrical system and the integration of the software, hardware, and electrical subsystems.

VISIBLE LIGHT COMMUNICATION SYSTEM MAY 2019

Utilized two USRP1 devices in order to transmit and receive modulated bits emitted from an LED and initially received by a photodiode. Implemented both the Binary Phase Shift Keying (BPSK) and Quadrature Phase Shift Keying (QPSK).

AMERICAN SIGN LANGUAGE/ENGLISH TRANSLATION SYSTEM JULY 2019 – PRESENT

Team received 1st place and funding from a competition at MIT Lincoln Laboratory to take a user-oriented approach to the creation of an ASL language model to facilitate translation from ASL to English and vice versa.

DIGITAL HARDWARE MORSE CODE DECODER DECEMBER 2019

Designed and simulated a system from digital hardware which took Morse code input from a button and outputted the ASCII code for inputted letters on LEDs. The system was also successfully run on an FPGA. Our hardware decoded dots and dashes and used a finite state machine to determine which letters to output.