NAHJAY BATTIESTE

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○ https://nahjay.github.io/

Education

University of Florida **Aug. 2024 – May 2026**
Bachelor of Science in Computer Engineering *Gainesville, Florida*
Broward College **Aug. 2022 – May 2024**
Associates of Arts, Transfer Major in Computer Engineering | GPA: 3.94 *Coconut Creek, Florida*

Technical Skills

Languages: Python, JavaScript, C, C++, HTML/CSS, SQL, Rust, Bash, Octave
Developer Tools and Technologies: VS Code, Emacs, Git, Trello, Postman, Linux, Docker, CUDA, Makefiles
Frameworks: FastAPI, PyTorch, React/React Native, Node.js/Express.js, OpenCV, DearPyGui, TensorFlow, Flask
Certifications: Certified Solidworks Associate, Six Sigma Yellow Belt, OSHA 10, NIMS CNC Mill, NIMS MMS

Experience

Cell Antenna Corporation **May 2023 – Present**
Software Engineer Intern *Coral Springs, Florida*
- Enhanced frequency generation for a Yocto Linux based SDR by developing a GUI with Python's DearPyGui framework. The intuitive front end replaced intricate command-line parameter manipulation, significantly boosting operational efficiency and user experience. Bash scripts were implemented in the back-end to seamlessly control the hardware, resulting in enhanced functionality.
- Designed and implemented an asynchronous API in Rust using the Actix-Web framework to seamlessly interface with a GPS device. The API efficiently handles concurrent requests and provides tailored GPS information that has been processed in Rust at each endpoint, demonstrating an adept integration of concurrent programming principles and low-level hardware interaction.
- Contributed to the development and troubleshooting of software and firmware for a scanning and jamming device in Python. Collaborated with the team to address and resolve issues in the codebase, improving the reliability and functionality of the device.
- Participated in the creation of a comprehensive direction-finding system, combining an API developed with FastAPI and a web interface featuring HTML, CSS, and JavaScript. Implemented a back end solution utilizing a combination of Python and Rust to retrieve and display direction data obtained from an antenna array, including the angle of signal reception and signal power levels.
- Built a Rust program to process raw binary data from an IQ file generated by a BladeRF FPGA-based SDR. The program converted in-phase and quadrature data into real and imaginary numbers, producing a CSV file for further analysis.
- Developed a set of Octave functions to manipulate CSV IQ data, enabling diverse operations such as amplifying specific frequencies and removing designated ranges. This application system provides a flexible and powerful approach to analyzing IQ data.

Baker Hill Industries **November 2022 – April 2023**
Mechanical Engineer Intern *Coral Springs, Florida*
- Created precise 3D models of customer components using SolidWorks, ensuring design accuracy and compliance with customer specific requirements and common aerospace industry specifications.

Sintavia **May 2022 – October 2022**
Mechanical Engineer Intern *Davie, Florida*
- Contributed to the creation of new aerospace additive manufacturing parameters in a metallurgical lab by conducting and meticulously documenting results from various analytical tests on powder materials used in the companies 3D printing process.

Projects

Jetson Nano Custom Kernel Modules | *C, CUDA*
- Integrated a CPU-based Linux kernel module and a GPU-accelerated CUDA kernel into a unified user application. Combined the both CPU and GPU environments to create a comprehensive firmware solution for effective .ppm image manipulation on the NVIDIA Jetson Nano.
- Implemented image processing solutions for the NVIDIA Jetson Nano, utilizing a custom CPU-based Linux kernel module. Developed algorithms within the Linux kernel environment to efficiently process image data, ensuring seamless integration with the overall firmware.
- Independently executed optimization of CUDA kernels, leveraging NVIDIA GPUs' parallel processing capabilities to enhance image processing performance. Achieved substantial performance enhancements by parallelizing image manipulation algorithms and maximizing GPU utilization.

Image Identification using Machine Learning | *Python, JavaScript, HTML, CSS*
- Developed a robust image recognition system using Tensorflow and Keras, implementing a convolutional neural network (CNN) for precise image classification based upon the CIFAR-10 dataset.
- Crafted an intuitive local web interface with the Flask web-framework, combining HTML, CSS, and JavaScript to allow users to seamlessly upload images for class prediciton based on my models evaluation.
- Iteratively fine-tuned the model and training parameters to enhance accuracy, showcasing expertise in Python-based deep learning and neural network architectures with a focus on TensorFlow and the Keras API.

Raspberry Pi Gesture Controlled Led System | *Python, Rust, JavaScript, Bash*
- Developed Python-based Raspberry Pi firmware to efficiently control GPIO pins, enabling interaction with RGB LED light strips that are individually addressable, allowing for pattern creation and manipulation.
- Formulated a React Native (JavaScript based) mobile app to initiate camera and gesture recognition on the Raspberry Pi, allowing users to control LED light strips with recognized gestures that are processed through Python using the OpenCV library.
- Implemented a RESTful Rust-based API to ensure communication between the React Native mobile app and the Raspberry Pi. This API facilitates real-time interaction with GPIO pins, providing responsive control over the LED light strips by calling designated Bash scripts that execute my gesture recognition algorithm upon access of the defined API endpoints.

Arduino Based Weather Station | *C++, Rust, HTML, CSS, JavaScript, SQL*
- Programmed C++ firmware for an Arduino and a ESP8266 NodeMCU Wifi Module. Devised data acquisition algorithms to efficiently gather information from temperature, humidity, pressure, altitude, light, and time sensors connected to the Arduino. Utilized the serial communication protocol to transfer the sensor data to the NodeMCU, which parsed the data and posted the relevant information to the API.
- Designed a robust back end in Rust using the Actix Web framework, implementing a high-performance RESTful API for the weather station. Leveraged SQL for efficient data storage and retrieval, ensuring seamless integration with the web interface.
- Engineered a dynamic and user-friendly web interface using JavaScript, HTML, and CSS for the weather station project. Implemented responsive designs and interactive features, providing real-time weather information in an intuitive format.

Extracurricular Projects

Farm Robot Project with Stem Club | *Python, JavaScript*
- Contributed to the design and optimization of a watering mechanism for autonomously irrigating crops. Utilized Python and JavaScript to create software modules for controlling moisture sensors, pumps, and sprinkler outputs.
- Actively participated in brainstorming sessions and technical discussions with club-members, contributing ideas and expertise to enhance the robot's overall capabilities and performance.