Ruben Alias

ruben.alias715@gmail.com | LinkedIn | Website | GitHub | Atlanta, GA

EDUCATION

Rutgers University - School of Engineering **Sep 2021-May 2025**
BS Electrical and Computer Engineering (Dean's List; 3.8) *New Brunswick, NJ*

EXPERIENCE

Delta Air Lines **Jan 2025 – Present**
Hardware Research and Design Engineer Intern *Atlanta, GA*

- Leveraged **embedded SoC**'s to prototype and iterate on components utilizing NFC, UART, I2C, Bluetooth, and SPI
- Implemented mock server-side software systems for effective testing and quality assurance
- Maintained up-to-date knowledge of research and development of **LLMs** and **RAGs** for use in prototypes

Rutgers OIT **Oct. 2022 – Present**
Application Developer *New Brunswick, NJ*

- Launched the myRutgers mobile app using **Flutter**, significantly enhancing user experience for **70,000 students and faculty** by introducing real-time course and transit updates.
- Collaborated with a team of 3 developers on the **service migration** of transit API data handlers

New York Yankees **May 2024 – August 2024**
Quantitative Analysis Associate *Bronx, NY*

- Designed a classification pipeline using **YOLOv8** which achieved **93%** per-video accuracy, resulting in greatly accelerated development for future computer vision tools
- **Trained** YOLOv8 keypoint detection **model** for **tracking** bat and home plate key points, reaching a **mAP50 of .84 and .96**, effectively **automating** feature extraction

WINLAB **Jun. 2023 – Aug. 2023**
Computer Vision Intern *New Brunswick, NJ*

- Constructed a **CNN** for autonomous navigation within a custom-built **ROS** architecture, deployed on an NVIDIA Jetson Nano for **real-time edge computing and inference** on a low power robotic system

PROJECTS

AI Model Assessment Platform

- Led 11 engineers to build a backend application designed to host ML competitions, and provide automated assessment
- Engineered a **containerized system** to deploy multiple models with **Docker** concurrently via a **REST API**
- Established **CI/CD** practices to promote **test driven development** with **Jest,** improving system reliability

AI Batter Keypoint Detection Tool

- Leveraged **YOLOv8** keypoint model for automated tracking, achieving **86% mean average precision**
- **Optimized GPU** resource utilization during testing via **multithreading** in Python, lowering test times by **75%**

MyRutgers Mobile Application

- Developed UI components for handling edge cases involving failed API requests, **improving UX** for all users
- Implemented **real-time generation** of bus route visualizations based on data provided by external APIs
- Optimized logging of user interactions by batching, **decreasing API load by 80%**

AI Graphics Upscaler Model

- Developed a super-resolution tool in PyTorch resulting in a **30% increase** in visual similarity(SSIM) and **90% increase** in resulting signal quality(PSNR), significantly improving visual quality of low resolution video frames

CUDA - Mandelbrot Set Generator Tool

- Leveraged high performance **CUDA** code to improve parallel performance over **multithreaded** CPU-based execution, resulting in **1,100% throughput increase,** from 17 seconds down to 1.6 seconds

Action Classifier - Multimodal AI Pipeline:

- Developed a real-time **multimodal AI classification model** for recognizing user actions from time-series sensor data.
- Selected the best model based on benchmarks, achieving **96% accuracy**, improving real-time motion recognition

FPGA Microprocessor

- Developed a low-level system architecture, including the ALU, registers, memory, FSM, and UART and VGA I/O
- Optimized performance via efficient pipelining, resulting in increased CPU throughput

Self-Driving Car

- Collaborated with a team of 10 to build a robotic platform for developing and testing autonomous driving
- Implemented **pure pursuit** to achieve basic self driving capabilities, while experimenting with AI solutions

SKILLS

- **Software Skills**: Python, C++, SQL, C#, Java, Javascript, Git, Linux, PyTorch, ML, AI, CI/CD, CUDA, OpenMP
- **Hardware Skills**: Soldering, Microcontrollers, SystemVerilog, DSP, Robotics, Digital Systems Design