Rajeev B. Botadra

Seattle, WA

rajeev.botadra@gmail.com | (602) 592-7316 | LinkedIn.com/in/rajeev-botadra | Github.com/RajeevBotadra

Education

University of Washington, MS in Electrical Engineering — Sept 2023 – Present

- **GPA:** 3.93/4.0
- **Coursework:** Computer Vision, Robot Manipulation, Machine Learning, VLSI I and II
- **Expected Graduation:** June 2025

New Jersey Institute of Technology, Dual BS in Computer Engineering & Mathematics — Sept 2019 – May 2023

- **GPA:** 3.91/4.0
- **Coursework:** Data Mining, Statistical Learning I and II, Intensive Programming in C++, Computer Architecture

Experience

University of Washington — *Seattle, WA*

Research Assistant — June 2023 – Present

- Accelerated Deep Neural Net architectures on FPGAs for sub-millisecond processing of neural data at the ACME Lab
- Constructed & trained VAE, LSTM, and Transformer based architectures to model neural population dynamics
- Quantized, synthesized, packaged, and deployed models on Xilinx Alevo platforms using Python and C++ HLS designs

L3Harris — *Camden, NJ*

Embedded Software Engineer Intern — June 2022 – Sept 2022

- Designed an identification-tree algorithm to extract features from radio data while minimizing power consumption
- Targeted low-power system for signal processing using ANSI C and Python, proof of concept presented to customer
- Visualized signal characteristics and evaluated extracted features in classification performance using MATLAB

R&D Software Engineer Intern — June 2021 – May 2022

- Created a Whitebox Machine Learning network driver with Fuzzy Logic to reprioritize mission-critical packet traffic
- Built a Genetic Learning algorithm to train agents, added policy mutations and clipping to promote convergence
- Trained policies outperformed baseline network policy by >72% in emulated constrained network tests

Projects

Wildfire Prevention & Response Drone (Capstone Project) — Sept 2022 – May 2023

- Designed a Wildfire response drone using Computer Vision, providing aerial situational awareness for ongoing fires
- Curated a dataset in COCO and JSON formats through frame-by-frame annotation of aerial wildfire footage
- Dockerized and deployed tuned Mask-RCNN, YOLOv5 on an Nvidia Jetson SoC for segmentation of live camera data
- Developed for a PX4 controller with ROS to integrate thermistor and humidity sensor and communicate with Jetson

Tweets Toxicity Analyzer using a LLM (App Landing Page 🔗) — March 2023

- Developed a toxicity classification pipeline for Tweets using Meta's RoBERTa LLM model hosted on Hugging Face
- Built an app interface for the Deep Learning pipeline using Streamlit and hosted on Hugging Face spaces

Traffic Intersection Microcontroller — Dec 2019 – Feb 2020

- Implemented sequential logic models of traffic intersections and presented them to a panel of Professors

Awards & Activities

2nd Place Design Award – NCE Salute to Engineering Excellence Conference — May 2023

Active Secret Security Clearance — Feb 2022

Student Scholar – NAE Grand Challenges Scholars Program — Jan 2021 – June 2023

1st Place Design Award – NCE Engineering Showcase — Feb 2020

Technical Skills

Languages: C/C++, Python (Pytorch & TensorFlow frameworks), MATLAB, R, SQL, x86 & RISC-V Assembly

Tools: Docker, CUDA, GCP, Kubernetes, Vivado IDE, Vitis HLS, SPICE (Multisim, hSpice)