Vivek Raj

vraj1@binghamton.edu | 631-353-8483 | github.com/rajv79 | linkedin.com/in/vivek-raj07 | Portfolio

EDUCATION

Binghamton University | Thomas J. Watson College of Engineering and Applied Science, NY
Master of Science in Computer Science, **Artificial Intelligence (AI) Track GPA: 4.0/4.0** **Jan 2024 - May 2025**

Binghamton University | Thomas J. Watson College of Engineering and Applied Science, NY
Bachelor of Science in Computer Science **GPA: 3.8/4.0 (Dean's List)** **Aug 2021 - Dec 2023**

TECHNICAL SKILLS

- **Programming Languages**: Python, Java, C++, C, SAP/ABAP, Linux
- **Libraries & Frameworks**: PyTorch, Scikit-Learn, TensorFlow, Large Language Models, Transformers
- **Technologies**: Machine Learning, Deep Learning, Reinforcement Learning, Predictive and Prescriptive Modeling
- **Tools and Platforms**: SAS, Matlab, AWS, Unix, Data Integration
- **Coursework**: **Machine Learning**, System Programming, **Artificial Intelligence**, **Operating Systems**, Advanced Computer Architecture, **Computer Security**, Design and Analysis of Algorithms, **Human-Computer Interaction**

PROFESSIONAL EXPERIENCE

Binghamton University, Teaching Assistant (CS) | Binghamton, NY **Aug 2024 - Present**
- Assisted 100+ undergrad and graduate students in **Computer Security**, demonstrating strong communication skills
- Provided support in understanding core concepts, including **cryptography** and **networking**
- Evaluated assignments and projects with constructive feedback to help students improve their understanding
- Communicated effectively during office hours to explain complex topics, ensuring clarity for students

Research Assistant | Binghamton University , NY **Feb 2024 - May 2024**
- Worked as a research assistant with an emphasis on prompt engineering to enhance AI's to respond to different tasks
- Tested various prompt styles and analyzed AI model outputs to identify patterns for optimization.
- Developed accurate responses by rigorous testing of **machine learning models** & **retrieval-augmented generation**.

Central Hudson Gas and Electric Corp, Software Intern | Poughkeepsie, NY **June 2022 - Aug 2022**
- Enhanced **SAP system integration** by leading the development of 4 **ABAP programs** for **SAP HANA**.
- Improved data management and analysis capabilities to support critical business decisions.
- Boosted system performance by 30% through the design of **CDS views** in Eclipse ADT.

PROJECT EXPERIENCE

NeoVision | Git **October 2024 - November 2024**
- Designed and built an **Android app** for real-time **handwriting recognition**, **object detection**, and **multilingual text processing**, enabling efficient analysis and interaction with diverse text inputs.
- Used **PaddleOCR**, **YOLO**, and **Google API** to detect text and objects like **packages**, **signs**, and **labels**.
- Implemented **OpenCV** for preprocessing with live **confidence score displays** for fast and accurate results.
- Enhanced tasks like **note-taking**, **document digitization**, and **accessibility tools** with AI-driven solutions.

ConcurrentTextAnalyzer (Map-Reduce for Text Processing) | Git **April 2024**
- Designed and implemented a **multithreaded map-reduce framework** in C, capable of reading and processing large text files by dividing them into segments for **parallel processing**, reducing processing time by 50%
- Developed and managed 8 worker threads to concurrently count letters and words within text segments. This approach increased processing speed by 40%, significantly improving overall efficiency
- Enhanced text analysis performance by applying map-reduce logic, enabling efficient handling of large data volumes

Air Mouse (Hackthon Winner) | Git **February 2024**
- Developed '**GestureControl**', a real-time hand gesture recognition system using **MediaPipe** and **TensorFlow**, achieving 97% accuracy in custom gesture detection and 3D hand tracking
- Programmed the server in Python using **TensorFlow** and **MediaPipe** for real-time gesture tracking, and the client in React.js for responsive UI control
- Optimized the pipeline for real-time performance, reducing latency by 50% through parallel processing and integration of MediaPipe's hand landmark detection framework

ACHIEVEMENTS and CERTIFICATES

- **1st Place Winner – Best TechHack (HACKBU 2024) [Project Link]** **February 2024**
- **Runner-up – QubitX Hacks [Project Link]** **April 2024**
- **Software Engineering Virtual Experience (JPMorgan Chase & Co.)** **July 2023**
- **Cybersecurity Virtual Experience Program (JPMorgan Chase& Co.)** **June 2023**