

# Vivek Raj

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## EDUCATION

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**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

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- **Programming Languages:** Python, C++, C, Linux, Java, SAP/ABAP
  - **Libraries & Frameworks:** PyTorch, Scikit-Learn, **Large Language Models**, Transformer, Tensorflow
  - **Technologies:** Machine Learning, Deep Learning, Neural Networks, Reinforcement Learning
  - **Coursework:** Machine Learning, System Programming, **Artificial Intelligence**, Operating Systems, Adv Computer Architecture, Computer Security, Design and Analysis of Algorithms, **Human-Computer Interaction**

## PROFESSIONAL EXPERIENCE

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- 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, 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 more accurate responses through rigorous testing of **machine learning models** and **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

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- AdaptiveScript | Git** March 2024 - May 2024
- Developed 'Self-Improving Text Generation' system using **BERT/GPT-3**, enhancing content coherence by 30% and user engagement by 25%
  - Achieved 92% sentiment analysis accuracy and 40% higher user satisfaction through personalized content delivery
  - Optimized text assembly, reducing generation time and improving conciseness by 35% through advanced techniques
- 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 | 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

## CERTIFICATES

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- **Software Engineering Virtual Experience (JPMorgan Chase & Co.)** July 2023
  - **Cybersecurity Virtual Experience Program (JPMorgan Chase & Co.)** June 2023