# Aravind Balachandar

Buffalo, NY | (716) 400-7802 | balacha2@buffalo.edu | https://www.linkedin.com/in/aravind4 | Website

## EDUCATION

**University at Buffalo, The State University of New York**  New York, United States
Master of Science in Data Science | GPA: 3.92/4.0  *Aug 2023 – Dec 2024*

**Anna University**  Chennai, India
Bachelor of Engineering in Computer Science | GPA: 8.15/10.0  *Aug 2017 – Apr 2021*

## TECHNICAL SKILLS

**Languages:** Python, Go, Java, R, SQL, NoSQL, C, C++, JavaScript, React, Node.js.
**OS & DevOps:** Linux, Git, Docker, Jira, Kubernetes, Jenkins, Kafka, Ansible, Nginx, New Relic, Apache, RabbitMQ, Power BI.
**Machine Learning tools**: LLM, PyTorch, TensorFlow, Spark, Hadoop, NumPy, Scikit-learn, Matplotlib, seaborn, OpenCV, Tableau.
**Cloud & Databases:** AWS (S3, EC2, Lambda, Kinesis, API Gateway), Azure, Postgres, MySQL, Redis, MongoDB, Oracle, Couchbase.

## EXPERIENCE

**Zummit Africa**  Delaware, United States
Machine Learning Engineer  *May 2024 – Aug 2024*
- Engineered and deployed a chatbot utilizing fine-tuned **LLMs,** including **LLAMA 2** and **GenAI,** with advanced **NLU**, **NLP** and **transformer** techniques, achieving a 90% effectiveness rate in generating contextually relevant responses.
- Achieved a 40% increase in user interaction rates by utilizing **Retrieval-Augmented Generation** (**RAG**) techniques with **Pinecone** as **vector database** and **Elasticsearch** for full-text search.
- Optimized algorithms with **GANs** using **TensorFlow**, resulting a 50% reduction in data processing time.
- Integrated **Copilot** into the company's website, improving real-time coding assistance and context-aware suggestions, resulting in a 35% increase in user productivity and engagement.

**Quickplay Media**  Chennai, India
Software Engineer | Python & Golang Developer  *Sep 2022 – Aug 2023*
- Enhanced **Couchbase NoSQL** performance by 64% through rigorous optimization of functions, queries and stored procedures, leveraging **Grafana** for performance monitoring and **Ansible** for streamlined configuration management.
- Designed and implemented EPG **Golang microservice**, reducing program guide data retrieval time from 250 to 110ms.
- Developed and integrated a real-time data streaming solution using **Apache Kafka** and **Spark Streaming**, which improved data ingestion rates by 70% and enabled near-instantaneous processing of live data feeds.
- Engineered **CI/CD** pipelines with **Jenkins** and **Docker**, enhancing build consistency and reducing deployment time by 50%.

**Accenture**  Chennai, India
Application Development Associate | Python & Golang Developer  *Mar 2021 – Sep 2022*
- Collaborated with team to initiate design and construction of a content aggregator using **Kafka**, **Java** and **Spring boot** yielding 71% reduction in code churn and improving system maintainability.
- Architected high-availability custom caching system for **OAuth token** with **Redis** and **Nginx,** resulted in a stunning 40% decrease in data access time, reduced latency, cut-down data load and a 50% boost in system responsiveness.
- Streamlined JotForm processing using **AWS Lambda**, **S3** and **API Gateway**, curtailing costs by 30% by eliminating the need for an **EC2 instance**.
- Optimized data workflows with **Apache Spark**, boosting processing speed by 45% for large datasets.

## PROJECTS

**Traffic flow optimization using multi-agent RL | Tech stack: Reinforcement learning, DQN, A2C**
- Reduced vehicle wait time by 30%, increased traffic flow efficiency by 25%, and achieved 95% simulation accuracy using **SUMO**, OpenStreetMap and **Deep Q Network (DQN) and A2C algorithms**.

**Netflix Movie and Show Recommender | Tech stack: Python, TF-IDF, Streamlit**
- Built a content-based recommendation engine using **TF-IDF and cosine similarity**, producing an 8000-feature similarity matrix for personalized suggestions of top 25 contents.

**Multimodal Emotion Recognition on Facial Expression and EEG | Tech stack: Computer Vision, Deep Learning**
- Developed real-time emotion recognition achieving 30 FPS using **OpenCV's Haar cascades**. Applied transfer learning with **ResNet15V2** to achieve 94% emotion classification accuracy after optimizing model architecture and hyperparameters.

## PUBLICATIONS

Adhithya S, Ganesh S, Aravind B. *Multimodal Emotion Recognition Based on Speech, Facial Expression and EEG*. IEEE 10th Annual International e-Conference on Information, Communication and Networking (eICICN), April 2021. Status: Yet to be published.