ASHWINI MURALIDHARAN

: https://ashwiinii.github.io/
: github.com/Ashwiinii
: amurali5@ncsu.edu
: +1(669) 278-8612
: linkedin.com/in/ashwini-muralidharan

Summary

An **AI (NLP) Developer** actively seeking full-time opportunities as a Software Engineer. Proficient in **Python, SQL**, and cloud technologies (**AWS**), with expertise in AI frameworks like **PyTorch, TensorFlow, and LangChain**. Specialized in Computational Intelligence and cloud architecture, adept at developing scalable AI solutions and applying sophisticated data analytics across multiple domains

Education

- **North Carolina State University** — Raleigh, NC, United States
  Masters in Electrical Engineering; ***GPA: 3.83/4.0*** — *Aug 2022 - May 2024*
  Academic Achievements*: Recipient of the* ***Graduate Student Support Plan (GSSP)****, a highly competitive support package providing standard tuition coverage, in recognition of academic excellence.*
  Courses*: Neural Networks, Topics in Data Science, Automated Learning and Data Analysis, Internet Protocols, Cloud Computing, Computer Vision, Random Processes*

Skills

- **Languages & Databases:** Python, SQL, R, Matlab, PostgreSQL, DynamoDB, SQLite
- **Frameworks & Libraries:** PyTorch, TensorFlow, Scikit-learn, LangChain, Transformers, FastAPI, PySpark, Pandas, NumPy, Streamlit
- **Tools & Platforms:** AWS (EC2, S3, Lambda, ECS, EKS, SageMaker), Docker, Kubernetes, Git, GitLab, Terraform

Experience

- **AI Engineer** — Sep 2024 - Present
  Union Bank of Switzerland (UBS) — *New York (remote), United States*
  - Designed and deployed an end-to-end **SQL co-pilot chatbot** by **fine-tuning** the SQLCoder text-to-SQL model, leveraging extensive **Retrieval-Augmented Generation (RAG)** and **prompt engineering** to translate user queries into SQLite commands, execute them, and deliver clean, actionable results.
  - Achieved **92% accuracy** in answering financial domain-specific questions (up from 80%) by integrating **Named Entity Recognition (NER)** and a feedback loop, reducing costs and **increasing savings up to 45%** by eliminating the need for manual execution of complex SQL queries for routine tasks.
- **Natural Language Processing Engineer** — Jun 2024 - Sep 2024
  NC State University — *North Carolina, United States*
  - Engineered a **Retrieval-Augmented Generation** (RAG) system using **LLaMA-3.2-3B** to perform semantic analysis of application resumes, extracting and summarizing key achievements of applicants with the ECE department at NCSU, leading to nearly **67% cost savings** across the department.
  - Executed extensive data preprocessing and annotation pipelines, leveraging natural language processing techniques to prepare training datasets
- **Biomedical Deep Learning Engineer** — Jun 2023 - Dec 2023
  The Vazquez Research Group — *North Carolina, United States*
  - Developed and integrated biomedical signal processing pipeline for cuff-less blood pressure estimation using ECG signals. Implemented **filtering, segmentation, hand-crafted feature extraction, and data augmentation**. Developed Deep Learning algorithms using LSTMs and Transformer technologies to automate blood pressure estimation for deployment on **mobile edge-devices** to facilitate real-time prediction, with a **93% accuracy**.

Selected Projects

- **QA-with-RAG**
  Natural Language Processing | Python | Docker | Streamlit | Faiss DB
  - Developed a containerized question-answering framework using retrieval-augmented generation (RAG), integrating **Google Gemma2** (2B) and **Microsoft Phi 3 Mini** (3.8B) language models with **all-MiniLM-L6-v2** embeddings and **Faiss DB**, reducing information access time by up to **50%** and maintaining a context relevance score above **0.8** for efficient and accurate document querying.
  - Implemented a user-friendly **Streamlit frontend** and Docker-based solution, enabling customizable document processing, retrieval parameters, and model selection, resulting in a versatile and easily deployable NLP application that accelerates decision-making processes and ensures high-quality, up-to-date data sources for optimal performance.

- **AWS Aurora PostgreSQL Monitoring System [ongoing]**
  Cloud Computing | Database Management | AWS Lambda | PostgreSQL | CloudFormation | Python
  - Engineering a serverless monitoring solution for **Amazon Aurora PostgreSQL** using **AWS Lambda** and **CloudWatch**, implementing custom metric collection and real-time dashboard visualization for enhanced performance visibility.
  - Developing a comprehensive **health monitoring system** for large-scale Aurora PostgreSQL deployments, tracking critical indicators like connections, transactions, and table/index bloat to optimize database performance and reduce incidents.