Sai Vaishnavi Vedantham

Arlington, TX

📞 +1-682-251-1142 ✉ sxv3683@mavs.uta.edu 🔗 LinkedIn ⭘ Vaish1630.github.io

PROFESSIONAL EXPERIENCE

The University of Texas at Arlington | *Research Assistant* **Sep 2023 - Present**
- Developed a multi-class classification system for finger-tap detection using deep learning and feature extraction techniques.
- Implemented a hand gesture recognition system utilizing MediaPipe to detect key points and classify finger taps using an MLP (Multi-Layer Perceptron).
- Trained the model to recognize taps between the thumb and each of the other fingers, recording all observations for further analysis.
- Processed collected gesture data using SAS for organizing and structuring output, ensuring efficient storage and retrieval.

Exposys Data Labs | *Data Science Intern* **Sep 2021 - Oct 2021**
- Engineered a machine learning model employing regression techniques to predict company profit, honing skills in predictive modeling and statistical analysis.
- Utilized SQL for data manipulation and extraction, demonstrating a strong foundation in handling large data systems.

TECHNICAL SKILLS

- **Programming Languages:** Python, R, C, Java, SQL, HTML, CSS, JavaScript, Scala
- **Data Science & NLP:** Transformer Models (BERT,GPT), LSTMs, Sentiment Analysis,OpenAI API, FAISS, Vector Embeddings
- **Big Data & Cloud:** Apache Spark, Hadoop, Snowflake, AWS Glue, Redshift
- **Data Visualization:** Power BI, Tableau, Matplotlib, Seaborn, RMarkdown, ggplot2
- **Databases & ETL:** PostgreSQL, MySQL, Apache Airflow
- **Machine Learning & Analytics:** Predictive Modeling, Regression, A/B Testing, Statistical Hypothesis Testing, SAS

RELEVANT PROJECTS

UTA | *Chatbot with Retrieval-Augmented Generation (RAG)* **Sept 2024 - Dec 2024**
- Developed an AI-driven chatbot using Retrieval-Augmented Generation (RAG) to provide precise and context-aware responses.
- Implemented a retrieval mechanism leveraging FAISS, efficiently searching and retrieving relevant text chunks from a structured knowledge base.
- Optimized query embedding techniques to enhance retrieval accuracy, reducing response latency and improving user experience.
- Designed a scalable architecture to support multi-turn conversations, ensuring seamless interaction with users.

UTA | *Sentiment Analysis for Brand Perception* **Jul 2024 - Aug 2024**
- Developed a sentiment analysis pipeline to analyze public opinions on social media platforms and track brand perception trends.
- Implemented Natural Language Processing (NLP) techniques such as tokenization, lemmatization, and stopword removal for effective text analysis.
- Built a machine learning-based sentiment classifier (Logistic Regression, Random Forest, and LSTM) achieving 85%+ accuracy in predicting polarity (positive, negative, neutral).
- Created interactive dashboards in Power BI and Tableau to visualize sentiment trends, helping businesses make data-driven marketing decisions.

UTA | *Predictive Maintenance System for Aircraft* **Apr 2023 - Jun 2023**
- Developed a machine learning-based predictive maintenance system that reduced aircraft part replacement downtime by 30%.
- Forecasted maintenance needs with 95% accuracy, ensuring operational efficiency and minimizing unexpected failures.
- Enhanced the reliability and safety of aircraft operations by proactively addressing maintenance needs.

UTA | *Speech Emotion Recognition using TESS Dataset* **Jan 2023 - Mar 2023**
- Developed a Speech Emotion Recognition (SER) system using Convolutional Recurrent Neural Networks (CRNNs) on the Toronto Emotional Speech Set (TESS).
- Extracted key features from speech signals using MFCCs (Mel-Frequency Cepstral Coefficients), python_speech_features, and wave for real-time analysis.
- Implemented three pooling strategies (max, mean, attention-based weighted pooling) to generate utterance-level emotion representations
- Optimized the model with TensorFlow 1.3.0, achieving high classification accuracy in detecting speech emotions.

EDUCATION

University of Texas, Arlington, TX **Jan 2023 - Dec 2024**
Master of Science, Data Science

Narsimha Reddy Engineering College (NREC), Hyderabad, India **Jul 2018 - Aug 2022**
Bachelor of Technology, Electronics and Communication Engineering