Vikas Reddy

Data & Analytics Engineer | ETL Pipelines, Data Warehousing

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Experience

Brain-Machine Interface Lab at UMBC — Baltimore, USA

ML Researcher, Deep Learning and Signal Processing — *Jan. 2024 – Present*

- Designed a scalable, multi-modal ML system integrating transformers and ConvLSTM for EEG and facial data, achieving 97% accuracy and demonstrating end-to-end project ownership; published at **BSN Conference**.
- Built EmoFormer, a SegFormer-based architecture for facial emotion recognition, using Scikit-learn for preprocessing, achieving 77.34% (FER2013) and 67.71% (AffectNet) accuracies and setting benchmarks.
- Collaborated on an end-to-end ML pipeline for lie detection (P300), integrating Kafka for real-time EEG streaming and CNN models, achieving 81% real-time accuracy while exemplifying autonomous multitasking & team synergy.
- Implemented a robust data collection protocol by gathering EEG data from 25 participants, creating a benchmark dataset and employing advanced signal processing to balance unstructured datasets.

Epam Systems — Hyderabad, India

Intern, Software Development Engineer in Test — *Jan. 2023 – June 2023*

- Applied SOLID principles and design patterns to develop automated test scripts, reducing deployment failures by 30% and aligning technical execution with business objectives through precise data analysis.
- Developed backend services and automation tools using Python/Java with Kubernetes orchestration, collaborating in Agile teams to deliver scalable features in bi-weekly iterations.
- Set up CI/CD pipelines with Jenkins, Git, and Docker, cutting build times by 35% and streamlining deployments via systematic troubleshooting and strategic problem translation.
- Leveraged AWS services (Lambda, S3, Athena) with Hadoop to build fault-tolerant data processing systems handling 50GB+ of data, effectively turning technical challenges into actionable insights.

IndicWiki Project — Hyderabad, India

Intern, Data Analyst — *Mar. 2022 – June 2022*

- Built a scalable Python-SQL pipeline to scrape 10,000+ articles for Wikipedia translations, boosting accessibility for 50M+ speakers. Optimized workflows to cut preprocessing time by 30% while maintaining 98% accuracy.
- Authored comprehensive documentation for data pipeline processes, reducing onboarding time by 40%. Enhanced team synergy through clear, actionable guidelines.
- Performed in-depth analysis using statistical methods and visualization tools (Tableau, Matplotlib) to identify translation trends. Improved content quality by 20% while reinforcing robust analytical expertise.

Projects

Stock Price Prediction | *Python, TensorFlow, LSTM, NumPy, Matplotlib* — GitHub

- Engineered and deployed an LSTM-based deep learning model for stock price prediction, ensuring 84.39% of predictions were within ±10% accuracy of true values, demonstrating robust forecasting capabilities.
- Optimized model performance through extensive data preprocessing, hyperparameter tuning, and cross-validation to enhance prediction reliability.

Lexically Constrained Beam Search for Machine Translation | *Python, PyTorch, Hugging Face* — GitHub

- Fine-tuned LLMs and implemented constrained beam search from scratch to control lexical output in machine translation tasks.
- Validated model performance using WMT (TR-EN) data, achieving BLEU-based improvements across 300+ test cases.

Technical Skills

Languages: Python, Java, SQL, R, C/C++, HTML, CSS, TypeScript, JavaScript, JSON, XML
Frameworks: TensorFlow, PyTorch, Keras, Flask, FastAPI, PySpark, Hugging Face Transformers, LangChain, CrewAI
Developer Tools: Docker, Kubernetes, Jenkins, Git, AWS, VS Code, JIRA, Tableau, Power BI
Libraries: NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn, OpenCV, Transformers, Selenium, TestNG
Others: Data Structures, NLP LLMs, CI/CD, Automated Testing, Design Patterns, SOLID, Agile (Scrum/Kanban)

Education

University of Maryland Baltimore County (UMBC) — Baltimore, MD

Master's in Data Science; GPA: 4.0 — *Aug. 2023 – May 2025*

Institute of Aeronautical Engineering (IARE) — Hyderabad, India

Bachelor's of Technology in Computer Science and Engineering; GPA: 3.41 — *May 2019 – May 2023*