Vikas Reddy

Machine Learning | Scalable Pipelines, NLP, and Intelligent Systems

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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 feature processing, achieving 97% accuracy, enabling efficient end-to-end workflows; published at **BSN Conference**.
- Engineered EmoFormer, a SegFormer-based model for facial emotion classification, leveraging Scikit-learn preprocessing and improving benchmark scores on FER2013 and AffectNet.
- Built an end-to-end ML pipeline for real-time EEG-based lie detection, streaming data with Kafka and training CNNs for signal classification, achieving 81% accuracy.
- Created a robust data protocol and benchmark EEG dataset from 25 participants; applied signal augmentation techniques to improve model generalization for P300 signal detection.

Epam Systems — Hyderabad, India

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

- Implemented scalable automation frameworks using SOLID principles, reducing deployment failures by 30% and improving test coverage for ML-integrated systems.
- Built backend services and Python/Java-based ML tools within Agile sprints; deployed via Kubernetes to support iterative model experimentation and evaluation.
- Established CI/CD workflows using Jenkins, Git, and Docker to streamline ML pipeline integration and cut build times by 35%.
- Utilized AWS (Lambda, S3, Athena) and Hadoop for distributed processing of 50GB+ test datasets, showcasing scalable data pipeline design for machine learning use cases.

IndicWiki Project — Hyderabad, India

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

- Designed a robust pipeline to scrape, preprocess, and clean 10,000+ Wikipedia articles, supporting NLP-based translation to regional languages for broader access.
- Optimized ETL flows in Python and SQL, reducing preprocessing time by 30% and ensuring 98% data accuracy across multilingual datasets.
- Documented data pipelines to streamline onboarding and ensure reproducibility for NLP model training.
- Performed analysis using Tableau and Matplotlib to identify trends and improve content quality by 20%.

Projects

Linkedin Referral Automation Using Selenium | *Python, Selenium* — GitHub

- Built an automation tool in Python to streamline LinkedIn referral workflows, enhancing large-scale outreach with personalized messaging and reducing manual effort by 80%.
- Designed a robust script to interface with LinkedIn APIs, enabling scalable user interactions and consistent follow-up logic for recommendation-driven engagement.

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

- Fine-tuned large language models for constrained sequence generation, implementing beam search with lexical constraints to improve relevance in NLP outputs.
- Benchmarked TR-EN machine translation using WMT data and BLEU scores; validated improvements across 300+ test cases, showcasing practical NLP enhancement techniques.

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*