

Vikas Reddy

ML Researcher – Machine Vision, Image Recognition & Data Analysis

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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

RESEARCH PUBLICATIONS

Deep fusion of neurophysiological and facial features for enhanced emotion detection. (n.d.). IEEE Journals & Magazine — IEEE Xplore. <https://ieeexplore.ieee.org/abstract/document/10945364>

EXPERIENCE

Brain-Machine Interface Lab at UMBC

Baltimore, USA

ML Researcher, Data & Analytics Pipeline Development

Jan. 2024 – Present

- Led research in machine vision and biomedical signal processing, designing a multi-modal deep learning system using Transformers and ConvLSTM to process EEG and facial features with 97% accuracy; results published
- Developed EmoFormer, a SegFormer-based architecture for facial emotion recognition, achieving 77.34% (FER2013) and 67.71% (AffectNet) accuracy, setting new benchmarks in real-world image classification performance.
- Engineered an end-to-end real-time EEG processing pipeline using CNNs and Apache Kafka for lie detection applications (P300), improving signal accuracy by 81% and contributing to neurotechnology innovation.
- Designed and implemented a data collection protocol for lie detection, gathering EEG data from 25 participants to create a benchmark dataset, and employed advanced signal processing to augment imbalanced EEG datasets.

Epam Systems

Hyderabad, India

Intern, Data Engineering and Automation

Jan. 2023 – June 2023

- Built robust backend services and automation tools in Python and Java, integrating with Kubernetes and AWS to ensure high-availability systems—demonstrating adaptability for prototype support environments.
- Created CI/CD pipelines using Jenkins, Docker, and Git, accelerating deployment cycles by 35%—skills transferable to rapid iteration in research environments.
- Worked closely with cross-functional teams in Agile settings, aligning with the collaborative, interdisciplinary approach emphasized in the role.

IndicWiki Project

Hyderabad, India

Intern, Client-Facing Data Analyst

Mar. 2022 – June. 2022

- Built a scalable NLP data pipeline for scraping, preprocessing, and cleaning over 10,000+ articles to enable translation from English to Telugu and Hindi—improving accessibility for 50M+ speakers.
- Reduced data preparation time by 30% using Python and SQL, with 98% accuracy in multilingual datasets—demonstrating strong data integrity and quality control in research workflows.
- Documented and optimized pipeline architecture, reducing onboarding time by 40%—a critical skill for maintaining reproducibility in scientific research.
- Analyzed data and visualized trends using Tableau and Matplotlib to extract actionable research insights.

PROJECTS

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

GitHub

- Built and deployed an LSTM model for stock price prediction with 84% of outputs within $\pm 10\%$ error, demonstrating forecasting strength. Improved performance through preprocessing, tuning, and cross-validation.

Lexically Constrained Machine Translation | *Python, PyTorch, Hugging Face*

GitHub

- Built and fine-tuned large language models with custom beam search to guide word choice, enabling accurate and user-controlled translations. Improved BLEU scores on WMT (TR-EN) data across 300+ test cases.

TECHNICAL SKILLS

Languages: Python, SQL, Java, R, C++, Bash

Machine Learning & Vision: PyTorch, TensorFlow, Keras, Scikit-learn, OpenCV, Hugging Face Transformers

Signal & Data Processing: NumPy, Pandas, Matplotlib, Seaborn, Kafka, PySpark

Developer Tools: Git, Docker, Kubernetes, Jenkins, VS Code, JIRA, AWS (Lambda, S3, Athena)

Other Skills: EEG Signal Analysis, Emotion Recognition, LLMs, NLP, CI/CD, Agile (Scrum/Kanban), SOLID Principles