Arin Balyan

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Education

Vellore Institute of Technology, Bhopal, MP   CGPA: 8.32/10
Bachelor of Technology in Computer Science, Specialization in AI & ML   *September 2022 – June 2026*

Projects

EmotionML | FastAPI, PyTorch, React.js   Link
Real-Time Emotion Recognition Platform

- Engineered a scalable FastAPI backend serving 9 pre-trained PyTorch models for real-time facial emotion detection, supporting 3 datasets (FER2013, RAF-DB, CK+48) and 3 CNN architectures (MobileNetV2, ResNet50, VGG19)
- Achieved robust model performance, with VGG19 reaching 98.99% accuracy on CK+48 and 80.28% on RAF-DB, and MobileNetV2 optimized for real-time inference on resource-constrained devices
- Designed RESTful APIs for seamless integration with a React frontend, enabling instant emotion prediction from user-uploaded images and returning top emotion with confidence scores
- Implemented automatic model loading, caching, and GPU acceleration, ensuring low-latency inference and efficient resource utilization
- Developed comprehensive error handling, logging, and CORS support, making the backend production-ready and easily integrable with modern web applications

AgroAid | Python, TensorFlow, Scikit-learn, Flask   Link
ML-Powered Agricultural Assistant

- Implemented ensemble methods (Random Forest, XGBoost) for crop yield prediction using 1M+ agricultural records, achieving 15% improvement over baseline models
- Developed crop recommendation system using collaborative filtering and content-based approaches, validated through 5-fold cross-validation
- Applied feature engineering on weather, soil, and historical yield data, handling missing values and outliers using statistical imputation
- Deployed ML models using Flask API with 99.9% uptime, serving 500+ daily predictions
- Integrated multilingual voice assistant to increase accessibility for farmers in rural areas

Traffic Flow Prediction | Python, LSTM, TensorFlow, Time Series Analysis   Link
Machine Learning Traffic flow detection

- Developed a traffic flow prediction model using LSTM neural networks, achieving 93% accuracy for 15-minute interval predictions
- Trained the model on spatio-temporal data from 36 sensor locations, processing time-series data recorded at 15-minute intervals
- Implemented time-series forecasting techniques to predict traffic congestion patterns, aiding in traffic management systems
- Conducted extensive model evaluation using cross-validation and hyperparameter tuning to enhance predictive performance
- Significantly reduced Mean Absolute Error (MAE) through iterative model optimization and feature selection techniques

Certifications

Applied Machine Learning in Python - University of Michigan, Coursera	Score: 93.69%
Ethnus MERN Full-stack Developer Certification - Ethnus	Score: 90%
IBM Blockchain Developer Certification Program - IBM	Score: 86%

Technical Skills

Languages: Python, C/C++, JavaScript, SQL
Machine Learning: Scikit-learn, TensorFlow, PyTorch, Keras
Data Analysis: NumPy, Pandas, Matplotlib, Seaborn, Plotly, Jupyter
Web Frameworks: React.js, Express.js, Django, Flask
Cloud Platforms: AWS, Google Cloud Platform
MLOps: Docker, Git, Model Deployment
Databases: MongoDB, Firebase, MySQL, PostgreSQL
Soft Skills: Leadership, Teamwork, Presentation, Adaptability, Problem-Solving, Critical Thinking