Aryan Saini

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Projects

Multimodal Video Sentiment Analysis *Github*

- Developed a BERT + 3D ResNet + CNN fusion model achieving 68% sentiment accuracy and 62% emotion recognition on the MELD dataset.
- Optimized model with 313k trainable parameters for real-time processing
- Built a Streamlit dashboard for real-time sentiment and emotion visualization across video segments.

Tennis Match Analysis System *Github*

- Trained custom YOLOv8 (Ultralytics) on roboflow dataset for player/ball detection (85% precision) and real-time tracking using object persistence algorithms
- Developed PyTorch-based CNN for court keypoint extraction, enabling shot trajectory analysis and court positioning metrics
- Engineered OpenCV pipeline to process match footage, integrating detection/tracking models into a unified analytics system

Sign Language Recognition System *Github*

- Developed a sign language recognition model using MediaPipe Holistic and TensorFlow, detecting gestures for "hello," "thanks," and "I love you."
- Created custom data preprocessing functions to convert video frames to RGB format and extract spatial coordinates of 543 body landmarks
- Designed a robust system for handling continuous video feed with frame processing at 30 FPS

Micro Doppler Based Target Classification *Github*

- Designed and trained a model in PyTorch, achieving 98% accuracy in classifying drones, RC planes, and birds from micro-Doppler radar spectrograms.
- Processed and optimized a dataset of 4,000+ spectrograms, applying data normalization, augmentation, and feature extraction
- Built a Streamlit app for real-time aerial target classification

Education

Noida Institue of Engineering and Technology *Nov 2022 to 2026*
B.Tech. in Computer Science (Artificial Intelligence & Machine Learning)

- CGPA: 8.55/10.0 (upto sixth semester)
- **Coursework:** Data Structures and Algorithms, Computer Networks, Machine Learning, Deep Learning, Operating Systems

Technical Skills

Core ML/DL: PyTorch, TensorFlow, Scikit-learn, Computer Vision, NLP, Time Series Analysis

Languages: Python (Advanced), Java (Intermediate), C (Intermediate)

Deep Learning: CNN, LSTM, Transformers, BERT, Transfer Learning

MLOps: FastAPI, Streamlit, Hugging Face Inference

Certifications

Fundamentals of Deep Learning (Nvidia) *Nov 2024*

Pytorch for Deep Learning Bootcamp (Udemy) *Oct 2024*