Kartik Awadh Yadav

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ACADEMIC DETAILS

Degree	Specialization	Institute	Year
B.Tech.	ECE	TIET Patiala	2022-2026
Class XII	Intermediate (CBSE Board)	Modern Vidya Niketan Sec-17	2020-2022
Class X	Matriculation (CBSE Board)	Holy Child Public School Faridabad	2020

PROJECTS

•Face Identification System Development using Keras Facenet [Apr '24 - Jul '24]

Project Link

- **Face Identification System with FaceNet and Keras:** Designed and developed a face recognition system using the FaceNet model in Keras, accurately identifying individuals based on their facial features. The system employs a robust L2 distance metric to determine the closest match among known individuals.
- **Interactive Interface with Text-to-Speech Integration:** Created a user-friendly interface that allows users to upload a test image. The system predicts the individual's identity, announces the name using text-to-speech functionality, and displays the image with the name annotated on it for easy identification.

• Silence Engineered — AI-powered Active Noise Cancellation for Smart Indoor Spaces. [Feb '25 - Apr '25]

- **1. AI-Enhanced Adaptive Noise Cancellation**
  The system uses adaptive LMS filtering combined with an LSTM-based denoising neural network trained on MFCC features for real-time acoustic signal reconstruction. Implemented in Python using TensorFlow, Librosa, and SoundDevice, it ensures low-latency anti-noise generation.
- **2. Real-Time DSP Architecture with Edge Hardware**
  Built for room-scale deployment, the system uses electret condenser microphones, Class-D anti-noise speakers, and a Raspberry Pi 4 (with audio interface) for on-device real-time processing. The pipeline supports waveform visualization and classification.
  The hybrid DSP-AI methodology is structured for patent filing and future B2C deployment.

• Deepfake detection engine combining spatio-temporal analysis with real-time scalable inference. [Jan '25 - Mar '25]

Project Link

- **1. Deep Learning Architecture**
  Implemented a 3D Convolutional Neural Network (CNN) with LSTM layers to capture both spatial and temporal inconsistencies in 20-frame video sequences, enhancing deepfake detection accuracy across diverse manipulation types.
- **2. Scalable Deployment & Inference**
  Containerized the model using Docker with GPU support, enabling high-throughput, low-latency inference. Integrated PyTorch for model execution, OpenCV for frame extraction, and RESTful APIs for real-time video analysis, facilitating smooth deployment in cloud and edge environments.

TECHNICAL SKILLS

•Programming Languages: Python, C, C++
•Technologies: NumPy, Pandas, Sklearn, Scipy, Matplotlib, Seaborn, Tensorflow, GAN, (SPICE) Software, DLX Processor.
•Others: Git, Github, PostmanAPI, AWS, Docker.

EXPERIENCE

•Machine Learning Intern at Zummit Infolabs, Bangalore(Remote)

Letter of Acceptance and LOR(link) [Apr '24 - Aug'24]

- **Developed Advanced Face Recognition System:** Designed and implemented a face recognition model using Keras-Facenet and custom preprocessing techniques, improving facial identification accuracy by 92%. The model utilized L2 distance for robust similarity measurements between facial embeddings.
- **Optimized Machine Learning Pipelines for Edge AI:** Integrated the face recognition model with TensorFlow and TensorFlow Lite, resulting in a 90% improvement in computational efficiency. Successfully deployed the model on NVIDIA Jetson Nano for real-time recognition with minimal latency.
- **Image Processing and Preprocessing Automation:** Automated the processing of facial images using OpenCV for resizing, color conversion, and embedding generation. Achieved 85% reduction in manual preprocessing time, facilitating efficient model training and deployment.

CERTIFICATES

• Machine Learning Specialization | Machine Learning Summer School
• Disaster Risk Monitoring using Satellite Imagery.