KARAN PATEL *AI/ML ENGINEER*

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PROFILE

AI/ML Engineer with hands-on experience in Computer Vision, NLP, and LLMs. Skilled in PyTorch, YOLO, and OCR systems, with proven success deploying real-time video analytics across 1,000 cameras and building transformer-based deepfake detection models. Experienced in designing end-to-end ML pipelines—training, fine-tuning, API integration, and cloud deployment (Azure, Redis). Strong track record in recommendation systems, RAG chatbots, and scalable AI solutions.

EDUCATION

B.Tech CSE 2021 – 2025 | Ahmedabad, Gujarat
Nirma University
CGPA: 7.6 / 10

SKILLS

Core AI/ML: Deep Learning, NLP, LLMs, Computer Vision (YOLO, OpenCV), Transformers,Hugging Face
Programming & Frameworks: Python, PyTorch, Ultralytics, Gradio
Data Science: EDA, Pandas, NumPy, Matplotlib, Seaborn
Tools: Git
Databases: MongoDB, SQL

CERTIFICATES

- TuteDude Data Science

PROFESSIONAL EXPERIENCE

AI/ML Intern May 2025 – Present | Ahmedabad, Gujarat
Vmukti Solutions

- Built a real-time surveillance system using Python, OpenCV, and YOLO to detect booth violations, room crowding, and EVM-based vote beep signals, triggering API alerts and saving evidence to Azure Cloud; deployed on 1,000 cameras via Vast.ai.
- Developed an automatic traffic violation detection system (wrong-way driving, red-light violation, restricted heavy vehicles) with YOLO + rule-based pipelines; fine-tuned PaddleOCR for ANPR, integrated Redis for intermediate storage, and automated alert generation with metadata (plate number, timestamp, rule broken, camera ID).
- Automated video classification workflow by fine-tuning PaddleOCR for camera text recognition and mapping footages into structured subfolders using CSV-based metadata.
- Designed and trained a custom deep learning model to classify and verify camera orientation, reducing manual setup overhead.

PROJECTS

Deep Fake Detection

- Video Deepfake Detection: Implemented *Deep Convolutional Pooling Transformer for Deepfake Detection* to distinguish AI-generated vs. real videos using transformer + neural network architectures on Face Forensic++ video datasets.
- Image Manipulation Detection: Built a CNN-based model inspired by *Shallow-FakeFaceNet* to detect facial edits (glasses replacement, nose/eye/hair modifications) on a custom handcrafted dataset of raw vs. manipulated images.

Content Recommendation System for Blogging Platform

- Built a personalized content recommendation system using k-Nearest Neighbors (kNN) to suggest blogs based on user reading history and content similarity.
- Developed a basic full-stack application (PHP, MySQL, JavaScript, HTML/CSS) to demonstrate how the system matches users with relevant articles, improving engagement.

Cricket-Expert Chatbot (RAG-based)

- Built a RAG chatbot to answer cricket match queries using match commentary files.
- Used Gemini API for responses, ChromaDB for vector storage, and Gradio template for web-based interface.

Mobile Shop Chatbot (Function Calling)

- Developed a chatbot with Gemini API to handle product availability and pricing queries.
- Implemented a custom callable function for price fetching, preventing hallucinations and ensuring reliable answers.