Pooja Vachhad

Computer Vision Engineer

CONTACT

mlainaarm@gmail.com

https://github.com/tumblr-byte

https://tumblr-byte.github.io

Noida, Uttar Pradesh

https://www.linkedin.com/in/pooja-vachhad-37a29036b/

PROFESSIONAL EXPERIENCE

SKILLS

- **Deep Learning**: PyTorch • YOLO • FasterR-CNN • ResNet • GANs • Transfer Learning

- **Computer Vision:** Object Detection • Segmentation • Pose Estimation • Face Recognition • Gaze Detection • Age/Gender Classification • People Counting • OCR • DeepSORT • MediaPipe • OpenCV

- **Tools:** Docker • GCP • Gemini API • Django • PostgreSQL • Git

- **Languages:** Python, SQL

HACKATHON EXPERIENCE
7+ hackathon projects spanning :-

- healthcare
- safety
- conservation
- education
- social impact domains

EDUCATION
Higher Secondary Education (PCB) | [2022]

Advanced Coursework: Deep Learning, Computer Vision, ML Mathematics (self-study)

Computer Vision & Deep Learning Projects| 2023–Present

- Built 10+ computer vision systems **YOLO detection**, **U-Net segmentation** (96.34% Dice), **pose estimation** (95.4%), **DeepSORT** tracking, and **face recognition**
- Achieved **99.44% accuracy** on industrial defect detection using ResNet-18 zero false rejections on 358 unseen test images
- Built a multi-model pipeline (**YOLO + DeepSORT + custom CRNN**) for helmet violation detection and number plate OCR, exported to **ONNX**
- Deployed on **GCP** using **Docker, Django REST APIs**, and **PostgreSQL** with **Datadog** for production monitoring
- Delivered 7+ AI projects in 24–48hr hackathons using **RAG**, **Gemini 2.5 Flash**, and **ElevenLabs voice AI**

KEY PROJECTS

Helmet Detection & Number Plate Recognition System - Multi-model pipeline for automated helmet violation
YOLO | DeepSORT | Custom CRNN | PyTorch | OpenCV | ONNX

- Built real-time violation detection with YOLO (4 classes) and DeepSORT tracking maintaining unique IDs across video frames
- Developed custom CRNN architecture (CNN + Bi-LSTM + CTC) for number plate OCR with ONNX deployment
- Implemented 5-frame violation confirmation with automated evidence collection (annotated videos + cropped images)

MedBridge – AI Emergency Healthcare Coordination System
Gemini 2.5 Flash (Vertex AI) | Django | ElevenLabs | RAG Datadog | GCP

- Built AI emergency platform coordinating hospital selection, ambulance dispatch, and patient guidance in under 60 seconds
- Implemented RAG-based hospital matching using verified data (specialty, beds, insurance) - eliminating LLM hallucinations
- Integrated Gemini AI for 2-second symptom triage and ElevenLabs voice AI for real-time patient support during transit
- Deployed Datadog observability monitoring LLM latency, error rates, and system health for production reliability

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Industrial Defect Detection using Deep Learning – Metal casting defects
PyTorch | Transfer Learning | Computer Vision | Manufacturing AI

- Built automated quality control system achieving 99.44% accuracy
- Implemented transfer learning with ResNet-18 on metal casting defects
- Zero false positives (no good parts rejected) in production validation