Shivansh Rajput

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github.com/RAPTOR-sr | Portfolio Website

Summary

AI/ML-focused computer science student with practical experience in computer vision, gesture recognition, and LLM-based applications. Adept in Python, TensorFlow, PyTorch, and natural language processing, with an emphasis on developing scalable AI solutions and high-accuracy machine learning models.

Education

Manipal University Jaipur, Jaipur — Sep 2022 – Present
Bachelor of Technology (BTech) - Computer Engineering

- GPA: 7.0 / 10.0

Birla Public School, Pilani — Jan 2021 – March 2022
High School (PCM+IT Stream)

- Percentage: 89%

Skills

Programming Languages: Python, C++
Databases: MySQL
Web Technologies: HTML5, CSS3, Django, FastAPI
Tools & Platforms: Git, GitHub, VS Code, Linux, Docker, AWS
AI/ML Concepts: Machine Learning, Deep Learning, NLP, LLM, CNN, Object Detection (YOLO)
AI/ML Libraries & Frameworks: TensorFlow, PyTorch, Scikit-learn, OpenCV, NumPy, Pandas, Matplotlib

Experience

AI/ML Intern — May 2025 – July 2025
CSIR - CEERI, Pilani

- Captured and processed high-precision 3D point clouds for 59 static and dynamic hand gestures using Time-of-Flight (ToF) camera technology.
- Engineered a real-time hand detection, segmentation, and visualization pipeline, achieving 25–30 FPS on an RTX 3060 (12GB) GPU with mAP@0.5:0.95 - 0.85, Precision: 98%, and Recall: 97%.
- Led a 4-member team over 45 days to collect and structure a 59-class gesture dataset containing 22,000+ RGB images and point cloud samples, supporting future model training and evaluation..

Projects

Real-Time CCTV Object Detection & Logging — GitHub Link

- Developed a Python-based live video analysis system, achieving 20–30 FPS on a laptop GPU to detect and label up to 80 object categories (e.g., cars, trucks, people) using YOLOv8.
- Achieved mAP@0.5 - 0.92, Precision: 96%, and Recall: 95%, enabling high-accuracy detection and reducing manual CCTV review time by over 70
- Integrated BLIP to generate contextual captions for detected objects and log results with timestamps to a CSV file for fast event retrieval.
- **Technologies Used:** YOLO v8, BLIP, OpenCV, Tkinter, PyTorch, Transformers.

Sign-Language-to-Text Conversion — GitHub Link

- Built a machine learning model to translate 28 sign language gestures into text, trained on 8,400 webcam-captured images, achieving 70% accuracy.
- Implemented real-time gesture recognition using computer vision techniques, delivering 30–40 FPS for smooth

live translation.

- **Technologies Used:** Python, Machine Learning, Computer Vision, OpenCV, Webcam Data Processing

Chat Assistant for SQLite Database (Trained LLM)

- Developed a chat assistant capable of generating SQL queries using a fine-tuned DeepSeek-R1-Distill-Qwen-1.5B model on 7,000+ SQL commands.
- Achieved a training loss of 1.47 in just 1 epoch, demonstrating efficient model learning.
- Designed and implemented model inference with support for natural language to SQL conversion for database queries.
- **Technologies Used:** Python, LLM Fine-Tuning (DeepSeek), NLP, SQL, SQLite

CNN-based Image Classification Model for Skin Disease Identification

- Implement a Convolutional Neural Network (CNN) model using TensorFlow and Keras to identify potential skin diseases from images.
- Trained the model on a custom dataset, achieving 75% accuracy with ongoing optimization to enhance performance.
- **Technologies Used:** Python, CNN, TensorFlow, Keras, Image Classification, Custom Dataset Handling

Certifications

Design and Analysis of Algorithms – NPTEL — Oct 2024

Tableau Fundamentals – Salesforce — Nov 2024

Switching, Routing, and Wireless Essentials – Cisco Networking — Nov 2024

Data Structures – Coursera — Dec 11, 2023

Programming in Python – Meta (via Coursera) — Nov 21, 2023

Interests

Artificial Intelligence, Machine Learning, Computer Gaming, Badminton, Traveling

Languages

English (Fluent), **Hindi** (Native)