

Sharnav Mahajan

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EDUCATION

Dr. D.Y. Patil Institute of Engineering, Management, and Research

2022 - 2026

Bachelor of Engineering - Artificial Intelligence and Data Science

CGPA: 8.9

PROJECTS

WallSift | *Python, PyTorch, DINOv2, FAISS, FastAPI, React, SQLite*

[\[GitHub\]](#)

- Built a local-first reverse image search engine for Wallpaper Engine, using DINOv2 embeddings and FAISS to retrieve visually similar wallpapers from image uploads or URLs.
- Developed a resumable crawling and embedding pipeline over 3.14M+ Workshop listings and embedded 1.45M+ eligible items into 384-dimensional vectors, achieving 99.91% coverage of the eligible corpus.
- Benchmarked Exact Flat, IVF, and HNSW indexes across 500 queries, selecting HNSW with 98.57% Recall@20 at 2.67 ms mean search latency.

Smart Video Monitoring for Crime Detection | *Python, PyTorch, YOLOv8, FastAPI, React*

[\[GitHub\]](#)

- Led a 4-member project team in training and evaluating computer-vision models for violence, weapon, face, pose, and scene detection, achieving 92% violence-classification accuracy and 0.753 mAP@50 for weapon detection.
- Integrated the trained models into a real-time video-processing backend, rendering detection overlays and bounding boxes on video streams with browser-based threat alerts and region-specific filtering.
- Developed the initial multi-criteria decision engine (MCDE) for combining signals from multiple vision models to determine threat levels and reduce reliance on any single detector.

Component Sense | *Python, FastAPI, React, Pinecone, Google Gemini*

[\[GitHub\]](#) | [\[Demo\]](#)

- Built a RAG-based documentation assistant for Material UI and React Native Paper, using Gemini embeddings, Pinecone retrieval, and documentation-grounded answer generation.
- Engineered semantic document chunking to preserve API tables, code examples, and section context, alongside a FastAPI backend with per-IP/global rate limiting and persistent local chat threads.

EXPERIENCE

Software Developer (Part-time, On-Demand)

Nov 2020 - Present

Mudra Prabodhini

- Built and maintain client-facing and internal tools using React Native, Flask, Firebase, and Python, including a remote fingerprint-capture app with a deployed image-quality classifier achieving 92.2% accuracy.
- Automated reporting and transcription workflows by rebuilding a legacy .NET tool in Python/Tkinter and integrating faster-whisper, reducing per-client transcription time from ~15 minutes to under 3 minutes

Python Django Intern

Dec 2024 - Jan 2025

Elite Softwares

- Completed hands-on training in HTML, CSS, Bootstrap, and Django and built and deployed the Nexora web project on PythonAnywhere implementing responsiveness, dark mode and working newsletter functionalities.

TECHNICAL SKILLS

Languages: Python, JavaScript, SQL, HTML/CSS

AI/ML: PyTorch, scikit-learn, Computer Vision, Embeddings, Vector Search, Retrieval-Augmented Generation (RAG)

Frameworks: FastAPI, Flask, React, React Native, Django, Node.js, Tailwind CSS

Data & Tools: Pandas, NumPy, Git, REST APIs, MySQL, SQLite, Firebase

ACHIEVEMENTS

- Shortlisted at the institute level in Smart India Hackathon 2023 and 2024, from pools of 70+ and 40+ teams, respectively.
- Led a team to 1st Place in the Project Based Learning Competition among 25+ teams.