Aayush Chauhan

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Professional Summary

Results-driven **Machine Learning Engineer** with expertise in **Deep Learning, Computer Vision,** and **NLP**. Built and deployed ML pipelines — from ensemble models with **99.76% accuracy** to **LLM-powered enterprise agents**. Skilled at turning complex data into actionable insights that drive measurable impact.

Education

Faculty of Technology, University of Delhi *Delhi, India*
Bachelor of Technology in Electronics and Communication Engineering *Expected May 2027*
Minor in Artificial Intelligence & Machine Learning CGPA: 8.50 / 10.00
Relevant Coursework: Deep Learning, Signal & Image Processing, Data Analytics, Probability & Statistics

Technical Skills

- **Languages:** Python, C++, SQL, HTML/CSS
- **ML/DL Frameworks:** PyTorch, TensorFlow, Scikit-learn, OpenCV, Hugging Face Transformers, Langchain
- **Data Science & Visualization:** Pandas, NumPy, Matplotlib, Seaborn
- **Platforms & Tools:** Git, Docker, Vector DBs, Flask, Streamlit, REST APIs, Google Cloud (Vertex AI)
- **Engineering Simulation:** MATLAB, Simulink, CST Studio Suite, Ansys HFSS

Projects

SAM AI – Smart Shopping Assistant [GitHub] *Python, FastAPI, LLM, NLP, TTS/STT, Fuzzy Matching*
Developed the core backend for an **AI-powered shopping assistant** with features like intelligent product search and recommendation, fuzzy matching, sustainable alternatives recommendation, recipe suggestions, and LLM-based intent recognition. Integrated text-to-speech and speech-to-text for a fully voice-interactive experience.

Intelligent Document Q&A System [GitHub] *FastAPI, Pinecone, Groq, LLM, SentenceTransformers*
Developed a **production-ready RAG system** for multi-format document analysis (PDF, DOCX, EML). Leverages an async architecture, Pinecone vector search, and Groq's Llama3 for **ultra-fast**, **context-aware Q&A**, achieving concurrent response times **under 2 seconds per question**.

HaritaX – Plant Disease Classifier [GitHub] *PyTorch, TensorFlow, CNN, Vision Transformer*
Engineered a novel deep ensemble model combining VGG16, ResNet50, ViT, and Swin Transformer with feature-level fusion. Achieved **99.76% accuracy** on the PlantVillage dataset, outperforming state-of-the-art benchmarks.

Saferoad AI – Real-Time Accident Detection [GitHub] *YOLOv8, OpenCV, Computer Vision*
Developed and trained a YOLOv8 model on a custom video dataset for real-time crash detection from live CCTV feeds. Integrated OLA Maps API to automatically dispatch alerts to nearby hospitals, aiming to reduce emergency response times.

Research & Publication

Cracking the Code of Spotify Hits *Paper under review*
Analyzed 40,000+ tracks to predict song popularity. Engineered features using PCA and optimized a Random Forest model to achieve **83.17% prediction accuracy**, demonstrating the critical impact of temporal data segmentation.

Achievements & Certifications

- **Hackathon Winner:** Awarded for the 'Saferoad AI' project at **D3 Hackathon, Amity University, Noida**
- **NITORI Scholarship (2024-25):** Awarded by the University of Delhi for outstanding academic excellence.
- **Machine Learning Specialization:** Stanford University (Coursera)
- **Computer Vision & Python for DS/AI Certifications:** IBM (Coursera)