Manish Kumar

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About

Results-driven Computer Science undergraduate specializing in Machine Learning, Deep Learning, and Data Analytics. Proficient in developing AI models, predictive analytics, and data visualization solutions.

Education

- **Jawaharlal Nehru Government Engineering College** — Sundernagar, India
  BTech in Computer Science & Engineering (AI & ML) - CGPA: 8.67 — *2022 – 2026*
- **Govt. Sr. Sec. School Patta** — Hamirpur, India
  Senior Secondary Education - Percentage-93.2 — *2022*

Technical Skills

- **Languages**: Python, SQL, HTML, CSS, C, C++, R
- **Frameworks**: PyTorch, OpenCV, Streamlit, Scikit-learn, Spacy, Transformer, Flask, Langchain
- **Tools and technologies**: Machine Learning, Deep Learning, Computer Vision, Generative AI, Tableau, Excel, LaTeX, MySQL,Oracle, PostgreSQL, Postman
- **Soft Skills**: Quick Learner, Team Collaboration

Experience

Research Intern — IIT Mandi
June 2025 – July 2025
Conducted research on biometric verification using forehead creases under Dr. Aditya Nigam, applying deep learning models (VGG16, Vision Transformer) and LoFTR for feature matching.Created a custom dataset with homography-based augmentation and evaluated model performance using SSIM, Cosine Similarity, EER.

Data Analyst — CodTech IT Solutions
Dec 2024 – Jan 2025
Built interactive dashboards in Tableau and data workflow using Excel (formulas,validation). Queried Oracle databases using SQL (DML, DDL, DCL) and gained exposure to R for data processing.

Research Intern — NIT Hamirpur
June 2024 – July 2024
Worked on biomedical named entity recognition under Dr. Pardeep Singh and Mr. Poonam Kashtriya using models like SciBERT and BlueBERT. Developed a Streamlit-based tool for real-time extraction of biomedical entities from user-input text.

Projects

- **AI-Powered Assistive Vision for the Visually Impaired (Major Project)**: Developing system using computer vision, OCR, and deep learning, with real-time object detection, text-to-speech, and navigation support. Built on Raspberry Pi for efficient processing with aim of reducing upto 90% dependency on others. Tech: Python, Langchain, YOLO (2025)
- **Extension for malicious QR code and URL detection(Minor Project)** : Developed a Chrome extension for detecting malicious vs. legitimate QR codes and URLs using a hybrid stacked model with online learning, achieving 92% accuracy. Tech: Python, Javascript, scikit-learn (2025)
- **Production-ready PDF RAG chatbot**: Built using Sentence Transformers, LangChain, and Gemini 1.5 Flash to query multiple documents with accurate, source-backed answers. Implemented semantic search, conversational memory, metadata tagging, and agent-based tool orchestration with a Streamlit interface. Tech: Langchain, Streamlit, Gemini, HuggingFace (2025)
- **Crop Recomendation System**: Designed a machine learning based classification system using Scikit-learn & streamlit to recommend suitable crops aimed to enhance agricultural decision-making by considering soil and climate conditions. Tech: pandas, Streamlit, Scikit-learn (2024)

Publications & Research Work

- **Paper: Enhanced Biomedical Named Entity Recognition Using SpaCy and BERT Models**: Published (2024).
- **Book Chapter: AI for Sustainable Design and Construction**: Published (2025).
- **Paper: Leveraging Deep Learning for Detection of Lumpy Skin Disease in Cattle: A New Era in Veterinary Healthcare**: Under Publication (2025).
- **Paper: AI-Based Crop Recommendation with LLM-Powered Advisory for Sustainable and Climate-Resilient Agriculture**: Under Publication (2025).
- **Paper: HybridStack-MLP: Advanced Ensemble Learning for Malicious QR Code and URL Detection**: Underpublication (2025).

Achievements

- **GATE DA 2025**: Qualified in the pre-final year with excellence. Also a coordinator of GATE wing under CSE CLUB.
- **Participation in Hackathons**: Two-time finalist at the State-Level Smart Hackathon (March – April & September–October 2025), achieving 1st place all over Himachal in the second edition.
- **Paper Presentation**: Presented 4 papers in International Conferences.