DHRUV KUMAR

+91 8979222503 ◇ India
dhruvkumarrana25@gmail.com ◇ LinkedIn ◇ Google Scholar

PROFESSIONAL SUMMARY

AI/ML & Software Engineer with strong foundations in machine learning, medical image analysis, and scalable software development. IEEE-published researcher passionate about transforming complex data into reliable, impactful AI-powered applications.

EDUCATION

Bachelor of Computer Science, Vellore Institute of Technology, Bhopal Campus 2023 – 2027
CGPA: 9.19

SKILLS

Programming Languages	JAVA, Python, SQL, C++, Assembly
Frameworks & Libraries	NumPy, Pandas, Keras, PyTorch
Machine Learning	Scikit-learn, OpenCV, Medical Image Processing
Web Development	HTML, CSS, JavaScript
Tools & Platforms	Google Colab, LaTeX

EXPERIENCE

Research Project – Nanyang Technological University (NTU), Singapore 2025 – Present
AI-Based Medical Dataset Creation

- Collaborating with Prof. Huihui Fang (Alibaba-NTU Joint Research Institute) to develop a high-quality, multimodal medical imaging dataset for brain tumor detection.
- Conducted comprehensive reviews of existing datasets to identify gaps and define the novelty of the dataset.
- Designed dataset structuring, annotation protocols, and metadata management for reproducible AI research.
- Contributed to the development of scalable and real-world AI pipelines integrating text and image modalities for medical applications.

Research Intern – Maulana Azad National Institute of Technology (MANIT), Bhopal Sep 2024 – Present
Music Ragas, AI & Healthcare

- Conducting research on the impact of Indian classical music Ragas on healthcare outcomes.
- Applied data analysis and computational techniques to correlate musical patterns with physiological and psychological responses.
- Performed literature review, dataset curation, and structured research planning.

Intern – TATA Projects Limited May 2024 – June 2024
Database Management, T&D Business Unit

- Worked on enterprise-level database systems for real-time industrial data management.
- Organized and optimized data workflows for structured storage and efficient retrieval.
- Gained exposure to IT infrastructure and enterprise database architecture.

PROJECTS

ML-Based COVID-19 Detection from Lung CT Images. Developed a ML framework using Tensor-Empirical Wavelet Transform (Tensor-EWT) and Gabor features for COVID-19 diagnosis. Feature selection via NCA and Student's t-value, classification with LS-SVM. Achieved 96.29% accuracy, 96.56% specificity, 96.03% sensitivity, and 95% F1-score. Published in IEEE.

Crop Disease Detection Using InceptionV3 Transfer Learning. Built a deep learning system trained on 54,000+ PlantVillage images (14 crops) using InceptionV3. Achieved 91.97% validation accuracy. Integrated TensorFlow Lite for on-device Android inference with IoT sensor monitoring. Submitted to IEEE.

Hybrid CNN–XGBoost Model for Early Diagnosis of Animal Respiratory Diseases. Developed a hybrid deep learning model combining CNN feature extraction and XGBoost classification to detect respiratory diseases in livestock using thermographic and RGB images. Achieved over 90% precision and recall in early, non-invasive detection, outperforming conventional methods and enabling real-time health monitoring in farm settings.

Kidney Ultrasound Classification via PCA-Guided Multi-Domain Feature Fusion. Fused deep learning and wavelet features with PCA-based selection for multi-class kidney disease classification, achieving state-of-the-art accuracy and robustness.

Medical Imaging Dataset Creation – NTU. Collaborating on a large-scale kidney medical imaging dataset involving dataset structuring, annotation planning, preprocessing (CLAHE, resizing, normalization), and metadata management for future AI-driven disease detection research.

BOOK CHAPTERS

Large Language Models in Email Fraud Detection for the Insurance Sector (Book Chapter – Under Review). Contributed a book chapter analyzing the use of LLM-based NLP techniques for identifying insurance-sector email fraud through semantic and contextual analysis.

PATENTS

Smart Device for Fruit Count and Quality Analysis. Registered Design under the Designs Act, 2000 (India) for a smart agricultural device enabling automated fruit counting and quality assessment. Design No.: 450757-001, Class: 10-05, Registered on: 07 March 2025.

SCHOLASTIC ACHIEVEMENTS

- **Raman Research Award** – Recipient of a prestigious research excellence award from VIT Bhopal University, awarded for outstanding contributions to AI and Machine learning research.
- **Global Academic Internship Program (GAIP)** – Shortlisted in the **Top 10%** by the National University of Singapore (NUS).
- **Indian Institute of Science Education and Research (IISER Bhopal)** – Shortlisted for a competitive research internship program.

LEADERSHIP & EXTRA-CURRICULAR ACTIVITIES

- Technical Advisor, **Google Crowdsource Club** & **Robox Club**; mentored students in AI/ML, robotics, and automation projects.
- Core Member, **AI Club**, VIT Bhopal; organized workshops, hackathons, and technical events to promote AI/ML research culture.
- Presented research at national and international conferences; conducted AI/ML workshops for students.