SACHIN MAURYA

B.Tech. (Honors) in Computer Science and Engineering (AI)

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Profile Summary

B.Tech (Honors) in CSE-AI with expertise in Data Science, Machine Learning, and Deep Learning, focusing on predictive maintenance, generative modeling, and medical image analysis. Achieved 90%+ accuracy in CNN-based models for classification, segmentation, and detection on CT and X-ray datasets. Skilled in Python, TensorFlow, OpenCV, and handling raw vibration signals and large-scale datasets for anomaly detection and performance monitoring. Currently advancing skills in Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), and Agentic AI, with a passion for real-world AI solutions and autonomous systems.

Education

Year	Degree / Institution	CGPA / Percentage
2025	B.Tech. 4th Year (7th Sem), Chhattisgarh Swami Vivekanand Technical University (CSVTU), Bhilai	7.6 (till 6th Sem)
2021	Senior Secondary, Holy Angels Public School (CBSE)	75%
2019	Secondary, S.B.T Public School (CBSE)	80%

Work Experience

Diagnostic Tool of a Centrifugal Pump (NSTL-DRDO) | IIT Roorkee | Onsite Jan 2025 – Jun 2025

- Built a predictive maintenance system for centrifugal pumps using LSTM, CNN, and ensemble models (XGBoost, Random Forest) on sensor time-series data.
- Designed a real-time dashboard for anomaly detection and failure prediction, improving operational efficiency in defense systems by reducing downtime.

Data Scientist | QuickCURD | Remote Feb 2025 – Aug 2025

- Engineered a multimodal diagnostic system combining CT scan and X-ray image models for medical condition detection across multiple body regions.
- Developed scalable ML workflows with emphasis on data consistency, domain-specific features, and robust handling of anomalies and edge cases in real-world clinical data.

Projects

- **Vibration Data Analysis of a Centrifugal Pump** [GitHub]
  - Processed real-time vibration sensor data to detect anomalies and evaluate pump performance using FFT and statistical analysis.
  - Designed and compared ML models (Random Forest, XGBoost, SVM, LSTM) for predictive maintenance and health monitoring.
  - Delivered actionable insights through violin plots, box plots, and performance dashboards to reduce operational downtime.
- **Human Activity Recognition using UCI HAR Dataset** [GitHub]
  - Implemented classical ML models (Logistic Regression, Linear SVC, Random Forest) and DL models for activity recognition.
  - Achieved state-of-the-art accuracy with Linear SVC (96.7%) and RBF SVM (96.27%), outperforming baseline approaches.
  - Built scalable preprocessing and feature extraction pipelines for wearable device sensor data.

- **Tooth Anomaly Detection** [GitHub]
  - Developed a YOLOv8-based object detection system to identify dental anomalies (decay, black stains).
  - Trained on 244 annotated dental images (915 instances), achieving mAP50 of 82% (decayed teeth) and 57.8% (black stains).
  - Optimized a 2-layer CNN model (3M parameters, 8.1 GFLOPs) for improved accuracy and efficiency.

Skills

Programming & Libraries: Python (NumPy, Pandas, Matplotlib, Seaborn, Scikit-learn, TensorFlow, PyTorch, OpenCV),MongoDB, MLOps, SQL

Core AI/ML Concepts: Statistics & Probability, Data Structures & Algorithms, Supervised & Unsupervised Learning, Ensemble learning, Deep Learning (CNNs, LSTMs, GANs), Natural Language Processing (NLP), Foundation Models

Advanced AI Technologies: Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), Prompt Engineering, Vector Databases (FAISS, ChromaDB), Agentic AI (LangChain, ReAct, AutoGPT – theoretical & experimental understanding)

Cloud & Deployment: Google Cloud (Firebase), AWS (S3, EC2 - basic),Spark,Docker (basic)

Achievements & Certificates

- Letters of Recommendation (LORs) from two Professors at IIT Roorkee for academic excellence and research potential.
- 5 Stars in Python Programming and 4 Stars in SQL on HackerRank.
- Python for Data Science – IBM SkillsBuild.
- Machine Learning with AI – Internshala & NSDC.
- Build Classical Machine Learning Models with Supervised Learning – Microsoft Learn.
- Introduction to Machine Learning – Microsoft Learn.
- Overview of Data Tools and Languages (MDL-221) – IBM SkillsBuild.
- Management Information System (Elite) – NPTEL.
- Computer Vision (Elite) – NPTEL.