

Abhinav Dhir

abhinavdhir.2517@gmail.com | [Linkedin](#) | [GitHub](#)

AI and Machine Learning enthusiast with practical experience in Deep Learning, Data Structures & Algorithms, and real-world applications. Eager to contribute towards building impactful solutions that make a difference.

Education

Thapar Institute of Engineering and Technology

Patiala

Bachelor of Technology in Computer Science and Engineering

August 2023 – June 2027

CGPA: 8.31/10

Merit 2 Scholarship Recipient - Awarded to students based on AIR in JEE Mains

Blossoms Senior Secondary School (PCM)

Patiala

Class 12 CBSE Score: 93.2%

April 2021 – May 2023

Projects

Mammography-Based Breast Cancer Detection | Python, TensorFlow, XGBoost, Pandas, NumPy

- Developed an ML and Deep Learning model to classify breast cancer findings using textual and image data from mammograms.
- Implemented XGBoost and Random Forest for text-based classification and explored deep learning approaches.
- Achieved an accuracy of 84% using ML models and 95% using DL models.
- Currently enhancing the model with BioBERT for text processing and EfficientNet for image classification.

Crop Recommendation System | Python, Pandas, Scikit-Learn, XGBoost

- Analyzed a balanced dataset comprising 3,100 entries with 100 samples per class, ensuring uniform representation across all target crop categories.
- Performed exploratory data analysis (EDA) using pair plot visualizations to investigate feature interactions and distribution patterns across agro-environmental factors.
- Leveraged advanced data preprocessing and feature engineering techniques to prepare the dataset for multi-class classification tasks, achieving a high predictive accuracy of 98%.

Emotion-Aware Speech Chatbot for Indic Languages | TensorFlow, Scikit-learn, LangChain, Gemini API, Streamlit

- Built a voice-enabled chatbot capable of understanding and responding in multiple Indic languages.
- Trained and evaluated ML and DL models for speech-based emotion detection to enhance conversational responses.
- Integrated multilingual NLP pipelines and real-time response generation using LLM APIs (LangChain + Gemini) within a Streamlit interface.
- Enabled dynamic emotion-aware interactions tailored to user sentiment and regional language input.

Technical Skills

Languages: Python, C/C++, SQL, R

Data Structures & Algorithms: Proficient in LeetCode (150+ problems solved)

Machine Learning & Deep Learning: TensorFlow, PyTorch, Scikit-Learn, XGBoost, Hugging Face Transformers, BioBERT, Pandas, NumPy, Matplotlib, Seaborn, Model Evaluation, Feature Engineering, Neural Networks (CNNs, RNNs, Transformers), Transfer Learning, Computer Vision (OpenCV, EfficientNet), NLP, Hyperparameter Tuning, Cross-validation, Train-Test Split, LSTM, GRU, RAG, LLMs

Visualization Tools: Matplotlib, Seaborn, Plotly

Tools & Other Skills: Git, Figma, Google Cloud, PostgreSQL, NetworkX, Google OR-Tools