

# Abdurrehman Afzal Warraich

Software Engineer — Machine Learning Engineer

Lahore | abdurrehmanwarraich27@gmail.com | tel: +923009067998

Portfolio | LinkedIn | GitHub

## Summary

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Ambitious and detail-driven software engineering student with a solid foundation in machine learning, deep learning, NLP, and full-stack development. Skilled in Python, data pipelines, and model deployment. Proficient in building intelligent web apps using Next.js and PostgreSQL. Eager to contribute to impactful AI solutions in a forward-thinking and tech-driven environment.

## Education

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**COMSATS Institute of Information Technology**, BS in Software Engineering Sept 2021 – Present

- GPA: 2.8/4.0

**Punjab College Gujranwala**, F.Sc Pre-Engineering 2019 – 2021

- Percentage: 80

## Technical Skills

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**Languages:** Python, SQL, JavaScript, C, C++

**AI, ML, and NLP:** Model training, fine-tuning using Scikit-learn, Pandas, Transformers and LangChain

**PostgreSQL:** Designing schemas, writing complex queries, joins, indexing, and integrating with ML backends

**Next.js:** Building performant web apps with dynamic routing, API integration, and deployment via Vercel

**Developer Tools:** Git, VS Code, Jupyter Notebook, Google Colab, Render, Firebase, Vercel

## Projects

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**Real-time Hate Speech Detection on Social Media** | *Python, Transformers, Flask, Scikit-learn, Imbalanced-learn*

- Fine-tuned DistilBERT on Twitter hate speech data using Hugging Face Transformers.
- Built a Flask API to classify sentences and tested with Postman endpoints.
- Evaluated model performance using F1-score and handled class imbalance with SMOTE.

**Legal Document QA Bot** | *Python, HuggingFace, LangChain, Streamlit*

- Built a semantic search and QA system for legal documents using LangChain and ChromaDB.
- Enabled PDF upload and embedding-based querying for legal question answering.
- Deployed frontend using Streamlit for live interactive search.

**AgroBoost (Final Year Project)** | *React Native, FastAPI, MongoDB, Firebase, Solidity*

- Designed a farmer-buyer ecosystem integrating crop yield prediction, auctions, and AgroCoin.
- Developed a React Native frontend and FastAPI backend with Firebase/MongoDB storage.
- Built a secure Virtual Coin payment system to have secure transactions.

## Courses

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### Machine Learning Specialization

Completed a comprehensive three-course series focused on supervised, unsupervised, and deep learning using real-world datasets.

### Natural Language Processing Specialization

Gained hands-on experience in building text classifiers, word embeddings, and transformer-based NLP models.