

Mahadev Pandharpote

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SUMMARY

Full Stack Developer and Computer Engineering Graduate with hands-on experience building production-ready REST APIs, fault-tolerant backend systems, and ML-integrated using Python, FastAPI, Flask, PostgreSQL, and cloud deployment (AWS, Docker). Familiar with Docker, AWS, and Git-based collaborative workflows. Holds a strong understanding of ML/AI concepts and LLM-powered pipelines.

SKILLS

- **Languages:** Python, SQL, JavaScript (basic), HTML, CSS
- **Backend & APIs:** FastAPI, Flask, REST API Design, OOP, Design Patterns, DSA
- **Data Science Libraries:** Pandas, NumPy, Scikit-learn, Matplotlib, Seaborn, PySpark, PyTorch
- **Machine Learning:** Regression, Classification, Clustering, Anomaly Detection, Risk Modeling, Prompt engineering
- **Visualization & BI:** Power BI, Streamlit, Excel
- **Databases:** MySQL, PostgreSQL, Oracle
- **DevOps Tools & Other:** AWS, Docker, Git/GitHub, CI/CD, Jira, Postman, Agile, Unit Testing, Postman, Debugging

PROJECTS

1. Insurance Premium API (FastAPI + PostgreSQL)

Tech: Python | FastAPI | Scikit-learn | Streamlit | Docker | AWS EC2 | Pydantic

- Built a machine learning API to predict insurance premium categories (Low / Medium / High) based on user health, lifestyle, and demographic data.
- Engineered features including automated BMI calculation, lifestyle risk scoring, and city-tier classification to improve model input quality.
- Designed and exposed a RESTful API using FastAPI with Pydantic schema validation and auto-generated Swagger documentation.
- Developed an interactive Streamlit frontend that collects user input and displays prediction results with confidence scores and class probabilities. And containerized the full application using Docker and deployed it on AWS EC2, implementing a complete ML pipeline from training to cloud production.

2. Real-Time Scream Detection & Alert System (Flask + ML)

Tech: Python | Flask | TensorFlow | Keras | ResNet34 | PostgreSQL | PyAudio | WhatsApp API | JavaScript

- Built a real-time audio classification web app that detects human screams from both uploaded audio files and live 5-second microphone recordings.
- Trained a deep learning classification model using TensorFlow/Keras with a ResNet34 architecture on mel-spectrogram audio features.
- Automated WhatsApp emergency alerts with the user's live GPS location upon scream detection, enabling real-world safety use cases. And logged all detection events including confidence score, timestamp, latitude, and longitude to a PostgreSQL database for audit and analysis.
- Implemented user authentication (signup/login), an admin dashboard for reviewing and filtering detection history, and saved audio playback.
- Deployed the application on a production server using Gunicorn with environment-based configuration for secrets and credentials management.

3. Telecom Customer Churn Prediction (ML + Data Pipeline)

Tech: Python | XGBoost | Scikit-learn | SHAP | Streamlit | Pandas | SMOTE | Imbalanced-learn

- Developed an end-to-end churn prediction system trained on 243,553 real customer records, achieving a ROC-AUC score of 0.91 with XGBoost.
- Performed in-depth EDA and feature engineering including tenure calculation, total usage aggregation, age grouping, and smart city/pincode handling.
- Addressed severe class imbalance (18% churn rate) using SMOTE oversampling, improving minority class recall significantly.
- Benchmarked three models (Logistic Regression, Random Forest, XGBoost), selecting XGBoost with 85% precision and 81% recall on churn class.
- Integrated SHAP waterfall plots for explainable AI predictions, enabling users to understand the exact reasons behind each churn forecast. And deployed a live interactive web application on Streamlit Community Cloud with a real-time visual risk gauge (green / orange / red).

EDUCATION

Bachelor of Technology (Computer Engg) - VDF College Latur | Nov 2021 – Oct 2025

GPA: 7.95/10.0

Relevant Coursework: Data Structures, Cloud Computing, Machine Learning, DBMS, Software Development

CERTIFICATIONS

- Certified Data Science Professional (Jul 2025) - AI Adventures, Pune