Stock Price Prediction

using Python & Machine Learning

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Project Overview:

This project demonstrates a deep learning-based approach to predict stock prices using historical data and technical indicators. The app provides a user-friendly interface to enter any stock ticker (e.g., `AAPL`, `MSFT`, `IEX`) and visualize stock trends, technical indicators, and future price predictions.

Features:

- Download 10 years of historical stock data using **Yahoo Finance.**
- Visualize 100-day and 200-day **moving averages.**
- See **technical indicators** like RSI, MACD, and EMA.
- Predict **next 30 days** of stock prices using **LSTM (Long Short-Term Memory)** neural network.
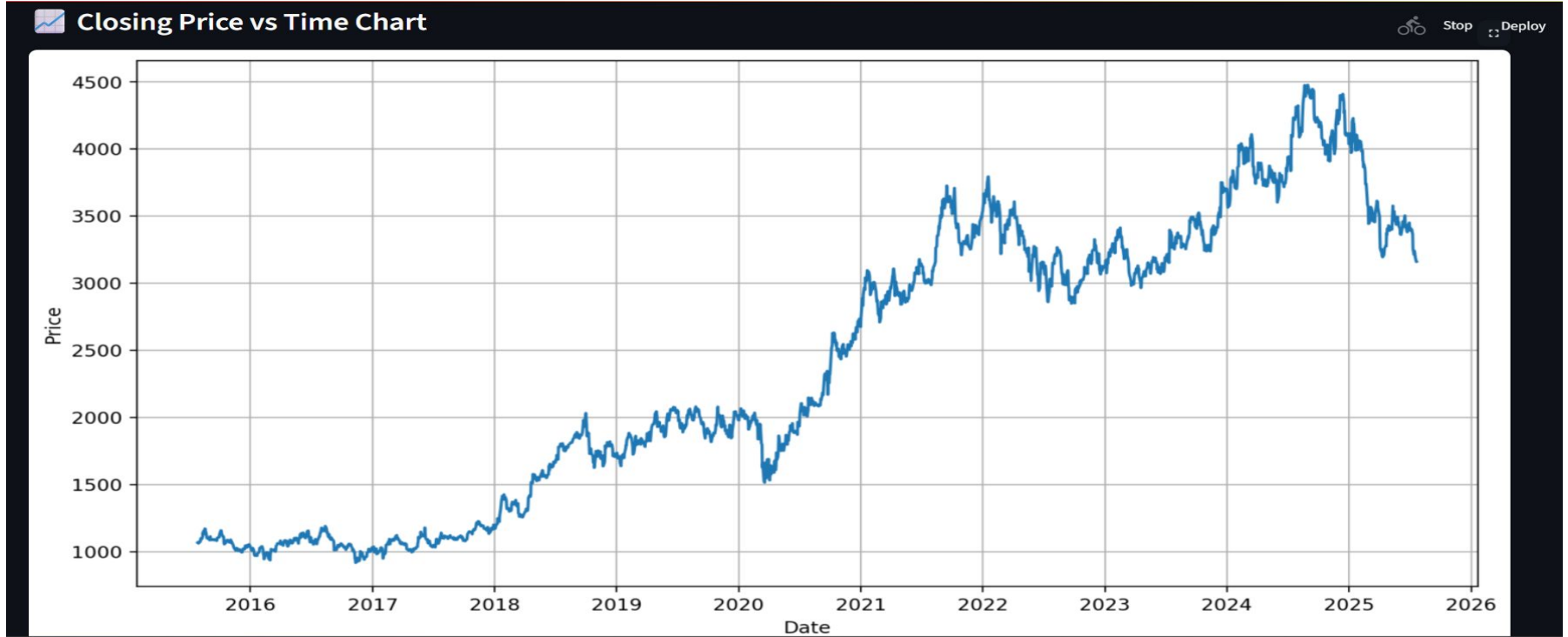- Interactive web application built using **Streamlit**.

Data Source :

Yahoo Finance API via the `yfinance` Python library.

Tools and Technologies Used :

- Python
- Pandas
- NumPy
- Matplotlib
- Seaborn
- TensorFlow
- Streamlit
- yfinance

Screenshots :

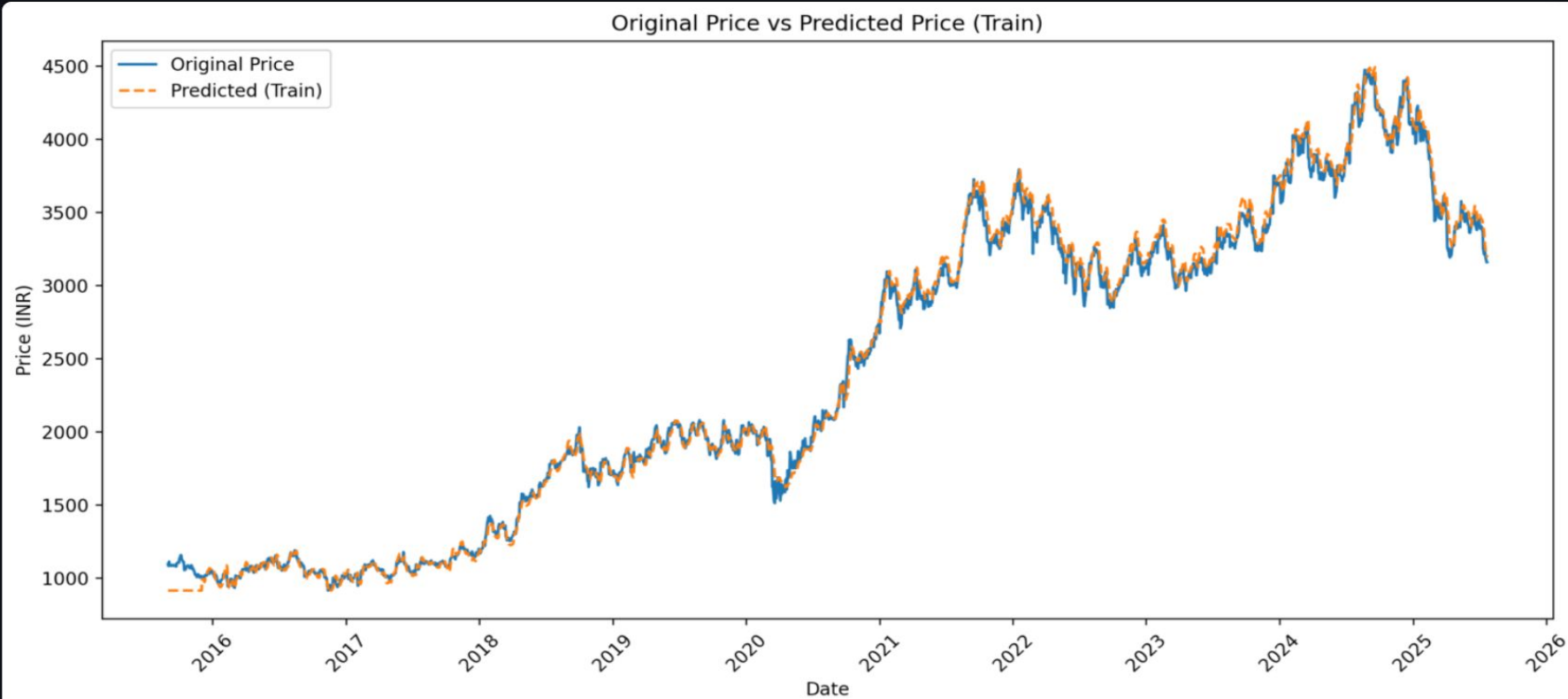# 📈 Closing Price vs Time Chart with 100-Day Moving Average

Closing Price vs Time Chart with 100MA & 200MA

Model Fit (Original vs Predicted on Training Data)

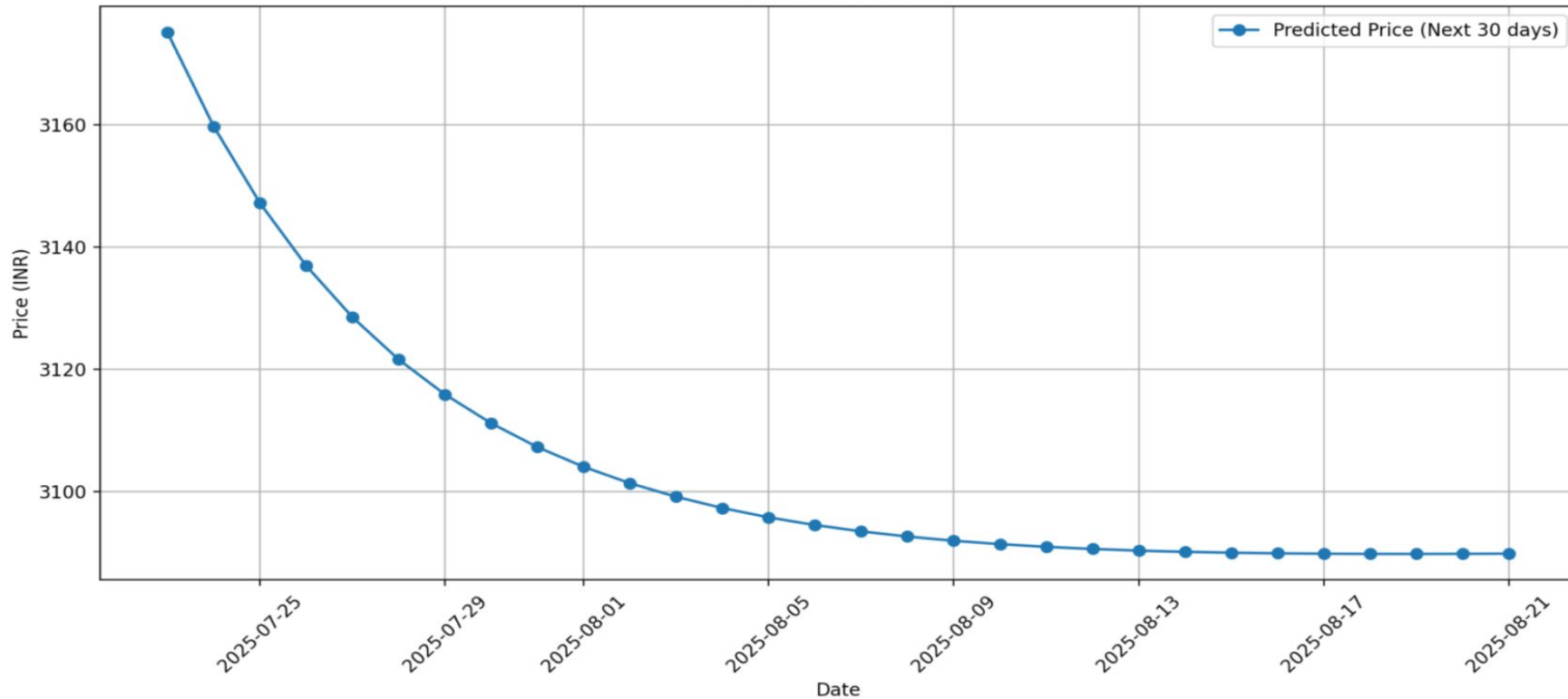Original Price vs Predicted Price (Train)

Stock Price Forecast (Next 30 Days)

Stock Price Forecast

📅 Forecasted Prices

Date	Predicted Close Price
2025-07-23 00:00:00	3175.04
2025-07-24 00:00:00	3159.68
2025-07-25 00:00:00	3147.15
2025-07-26 00:00:00	3136.89
2025-07-27 00:00:00	3128.47
2025-07-28 00:00:00	3121.55
2025-07-29 00:00:00	3115.84
2025-07-30 00:00:00	3111.12
2025-07-31 00:00:00	3107.22
2025-08-01 00:00:00	3103.99

Project Insights :

- Built a stock price prediction web app using **LSTM (Deep Learning)**.
- Automatically fetches 10 years of historical data for any stock ticker.
- Predicts and displays the next 30 days of stock prices.
- Shows 100-day & 200-day moving averages, MACD, RSI, and actual vs predicted price plots.
- Developed with Streamlit for the frontend, yfinance for data, and Keras/TensorFlow for the model.
- Easy to use for both technical and non-technical users to explore stock trends and future forecasts.