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Predicting NIFTY 50 Closing Price Using News Sentiment & LSTM

A Deep Learning + NLP Based Market Predictor

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Problem Statement

- Financial markets are influenced by investor sentiment.
- Goal : Predict next day's NIFTY 50 closing price based on sentiment from news headlines.
- Can we quantify sentiment and use it to forecast the market?

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Solution Overview

- Workflow : News → Sentiment Score → LSTM Model → Price Prediction
- Frontend : HTML/CSS
- Backend : Flask
- ML Model : LSTM using TensorFlow / Keras
- Sentiment Analysis : VADER

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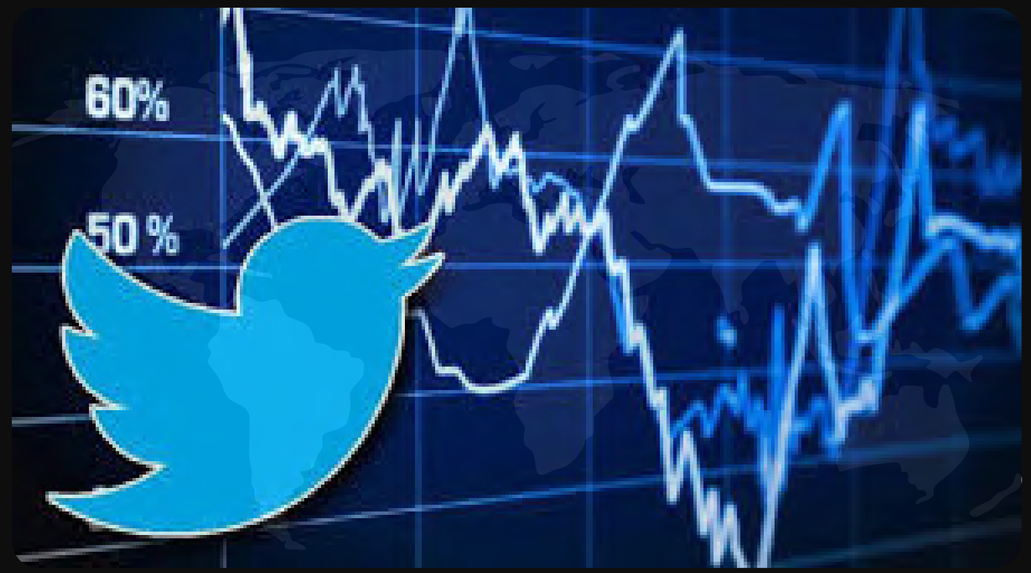
Data Collection & Preprocessing

- **Dataset :**
  News headlines and NIFTY 50 closing prices
- Missing values handled with forward fill
- **Features :**
  VADER sentiment score + closing price
- **Time series window :**
  10-day lookback for prediction



Sentiment Analysis

- Tool : VADER (Valence Aware Dictionary and sEntiment Reasoner)
- Why VADER : Lightweight, effective for financial text
- Sentiment score range: -1 (negative) to +1 (positive)

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LSTM Model Design

- **Input :**

10 days × 2 features (price + sentiment)

- **Layers :**

2 LSTM layers + Dense Layer

- **Output :**

Predicted closing price

- **Reason :**

LSTM is ideal for sequential time - series data

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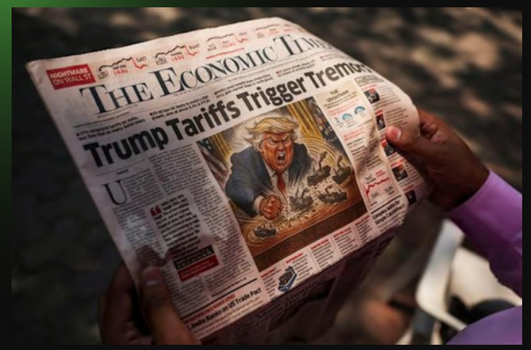

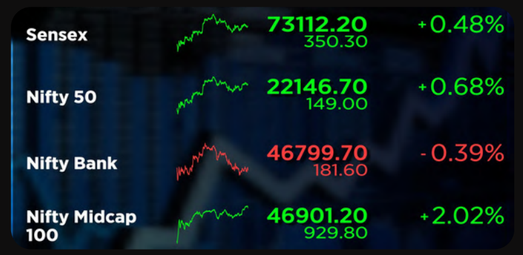

Web Application Demo

- User inputs a news headline via frontend form
- Backend calculates sentiment score using VADER
- LSTM model predicts next day's NIFTY closing price
- Result displayed instantly to the user

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Challenges & Learnings

- Aligning time-series data with news accurately
- Managing small dataset size and avoiding overfitting
- Combining NLP + LSTM into one pipeline
- Full-stack deployment experience with Flask

Future Scope & Conclusion

- Enhance with technical indicators (RSI, volume, etc.
- Use BERT for more accurate sentiment analysis
- Deploy via Docker + cloud hosting

Conclusion :

Deploy Successfully built a full pipeline for market prediction using sentiment analysis .


28930.76
28930.43
28930.42
28929.91
28929.89
28929.88
28928.62
28925.11
28925.08
28923.39
28925.75
10X плечо

Thank You.