FINANCE & ECONOMICS

TECHNICAL BOARD

Predicting **NIFTY 50** Closing Price Using News Sentiment & LSTM

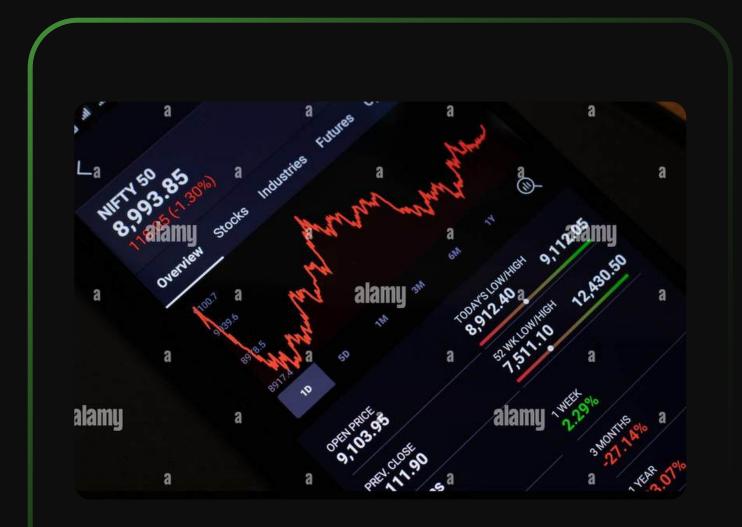*A Deep Learning + NLP Based Market Predictor*

NEXT >

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?

Solution Overview

- Workflow : News → Sentiment Score → LSTM Model → Price Prediction

- Frontend : HTML/CSS
- Backend : Flask

- ML Model : LSTM using TensorFlow / Keras
- Sentiment Analysis : VADER

NEXT >

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)

LSTM Model Design

• Input :

10 days × 2 features (price + sentiment)

• Layers :

2 LSTM layers + Dense Layer

• Output :

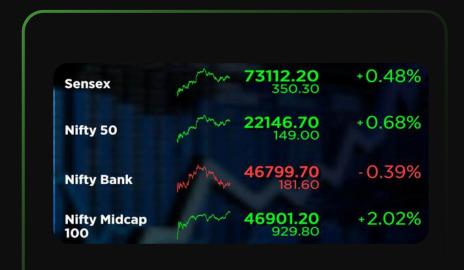Predicted closing price

• Reason :

LSTM is ideal for sequential time - series data

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

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 .

NEXT >