



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

*A Deep Learning + NLP Based
Market Predictor*

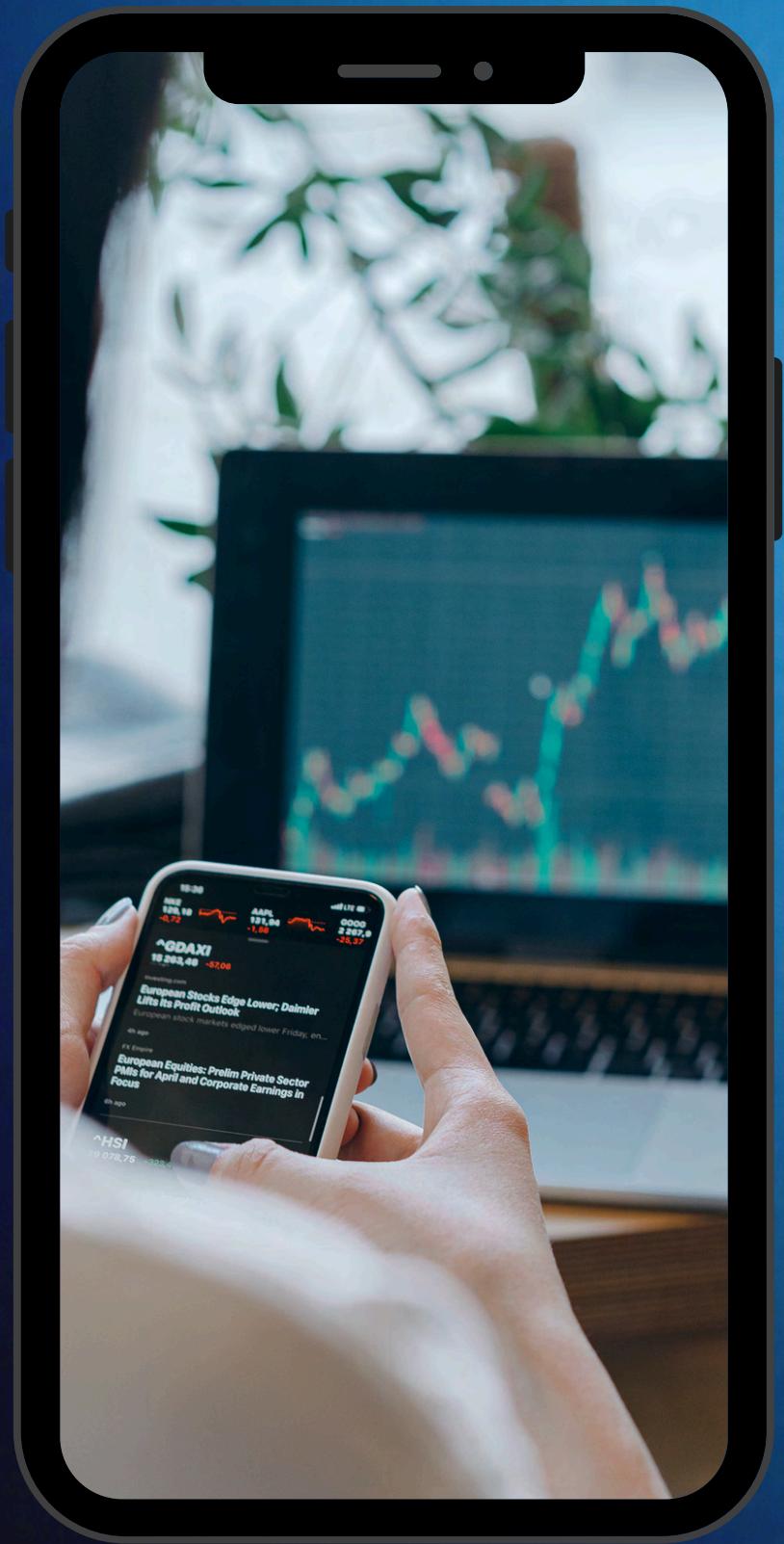
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Problem Statement

- 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

[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



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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 :**

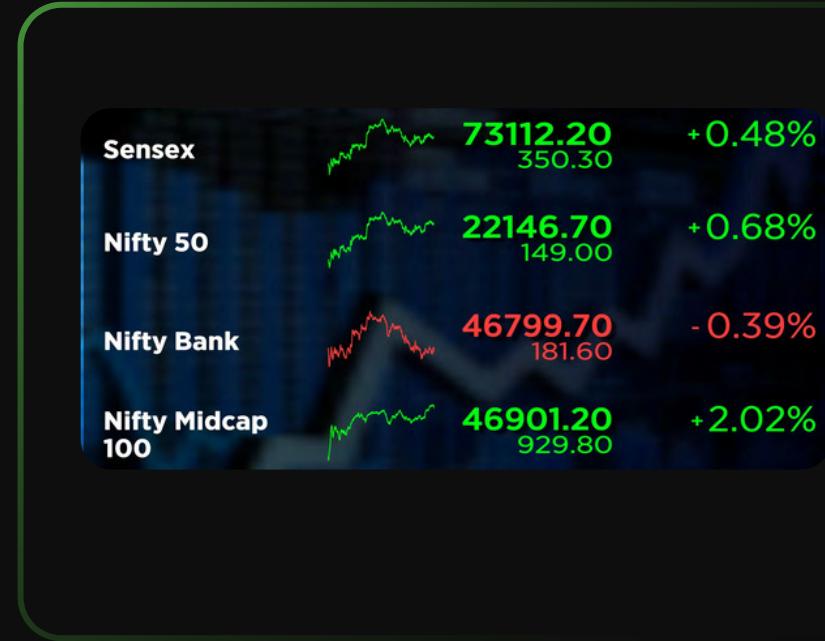
Predicted
closing price



- **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

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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 .





FINANCE & ECONOMICS

Thank You.



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