

# Synopsis: Enhanced Stock Price Prediction

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**Objective:** The project seeks to develop an advanced stock price prediction method by integrating social media data, particularly sentiments expressed by investors online. Recognizing the limitations of traditional models with nonstationary time series data, the objective is to harness the real-time emotional and attitudinal information available on platforms such as Twitter, Facebook, and financial forums to improve the accuracy of stock price forecasts.

## Methodology:

### 1. Data Collection:

- Real-time extraction of social media data related to stocks using web scraping and API integration.

### 2. Sentiment Analysis:

- Implementing Natural Language Processing (NLP) techniques to analyze sentiments, emotional tones, and attitudes within social media posts.

### 3. Feature Engineering:

- Integration of social media sentiment scores with traditional financial indicators.
- Creation of a comprehensive set of features capturing both quantitative and qualitative aspects.

### 4. Machine Learning Model:

- Development of a predictive model using machine learning algorithms (e.g., regression, random forests, or neural networks).
- Training the model on historical stock data alongside engineered social media features.

## Expected Outcomes:

- Improved accuracy in stock price predictions through the incorporation of sentiment analysis from social media data.
- Identification of key social media indicators influencing stock prices.
- Enhanced understanding of the relationship between investor sentiments and market trends.

**Significance:** The project addresses the limitations of conventional stock prediction models by incorporating real-time sentiment-rich data from social media. The output aims to provide investors and financial analysts with a more comprehensive tool for decision-making, bridging the gap between traditional methods and the dynamic nature of financial markets.

## Challenges:

- Mitigating noise and misinformation within social media data.
- Developing robust sentiment analysis models to accurately capture investor sentiments.

**Conclusion:** This project contributes to financial analytics by leveraging the power of social media data to enhance stock price predictions. The integration of sentiments expressed online provides a more nuanced understanding of market dynamics, offering valuable insights in the ever-evolving landscape of financial decision-making.

