



## **Stock Forecasting using Sectorial Analysis**

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### **Abstract:**

Stock price forecasting remains a complex challenge due to the dynamic and multifaceted nature of financial markets. Traditional models primarily rely on historical price data and technical indicators, often neglecting critical external factors such as investor sentiment and sector-wide dynamics. This research proposes a hybrid forecasting framework that integrates time-series modeling, sentiment analysis, and sector-level validation into a unified approach. Historical price trends are captured using time-series techniques, while sentiment signals derived from financial news and social media provide insights into market psychology. Additionally, sector relationships are validated using Dynamic Time Warping (DTW) and cointegration analysis to ensure that individual stock predictions align with broader industry movements. The proposed model is evaluated using Indian pharmaceutical sector data, demonstrating significant improvements in forecasting accuracy. Results show that incorporating sentiment reduces prediction error substantially, particularly during volatile market conditions, while sector validation enhances reliability by identifying contextually inconsistent forecasts. The hybrid approach outperforms baseline models across standard evaluation metrics such as MAPE and RMSE. Overall, this study highlights the importance of combining quantitative and qualitative factors in financial forecasting and presents a scalable framework that can be extended to multi-sector and portfolio-level analysis.

### **Keywords:**

Computers, Stock Price Forecasting, Time-Series Modeling, Sentiment Analysis, Financial News Analytics, Social Media Sentiment.