

# TWITTER AS A TOOL FOR FORECASTING STOCK MARKET MOVEMENTS WITH RUMOR IDENTIFICATION

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## ABSTRACT

As social media is increasingly playing a vital role by reflecting or influencing a person's individual life to large management systems. This context inspired to gain an interest, to explore and research. our paper helps to understand, better about whether the investors mood on stock markets are influenced by the micro blogging website/app twitter.

We are thus motivated by the possibility of a predicting stock market performance based on assessing twitter tweets relating to stocks. For these purpose, in this paper we tried to find the relationship between a well-known micro blogging platform twitter and financial markets. In particular, we consider a period of 5 months, the Twitter volume and sentiment about the 30 stock companies to predict the next metric and values of stocks based on stock related tweets.

The main objectives of this paper specify:

- To examine whether is there any affiliation between changes in the stock market performances regarding public sentiments based on trending topics.
- To verify how far Twitter tweets influenced on stock markets performance.
- The ability to use Twitter tweets for predicting stock market movements with rumor identification.

## INTRODUCTION

### TWITTER

In the past decade, Twitter has competed enormous growth through universally with the wide use of social networks. Twitter is at present the 10th most popular website with over 300 million active monthly users. Because of twitter efficient capabilities like API(storing tweets), filtering ability, feedback enabling, keywords and main due to his brevity. Helping researchers to on growth different ways of

using this micro-blogging platform to come off with new innovations in networking sites. In specific, some authors took an interest in the possibility of predicting financial markets using online sentiment tracking.

### STOCK MARKET

The other data of interest are of course stock data which is largely available online. Now a days it's been crazy in investing in stocks with

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very less known about how to and where to invest to get maximum profits. In this situation we blindly follow the third person in investing ours without the knowledge about how variations in stocks vary. This research paper might help many of the investors to predict stock movements based on twitter data along with rumor identification.

The stock market or equity market refers to public markets for issuing, buying and selling stocks (fractional ownership in a company) that trade on a stock exchange. An efficiently functioning stock market is important to economic development, as it gives companies the ability to quickly access capital from the public.

In our paper we collected NSE data for over a period of time(around 2 months). The National Stock Exchange of India Limited (NSE) is India's largest financial market. One of the more popular offerings is the NIFTY 50 Index, which tracks the overall performance of the stock

markets and is the largest assets in the Indian equity market.

### LITERATURE SURVEY

The research papers based on our paper study are designed and executed with efficient algorithms and techniques but in some cases the missing accuracy when implementing in real world and the rumor identification in predicting stocks and the limited tests carried among variables, limited sample data, collecting uncorrelated data, unknown user identifications etc. these aspects made to undertake the further future research into our paper.

Along with previous papers research work, we included methods like:

- Data sets, Attributes, Sample Data.
- Sentiment analysis + Statistical analysis + Python programming.
- Rumor identification using Google Trends.

### METHODOLOGY

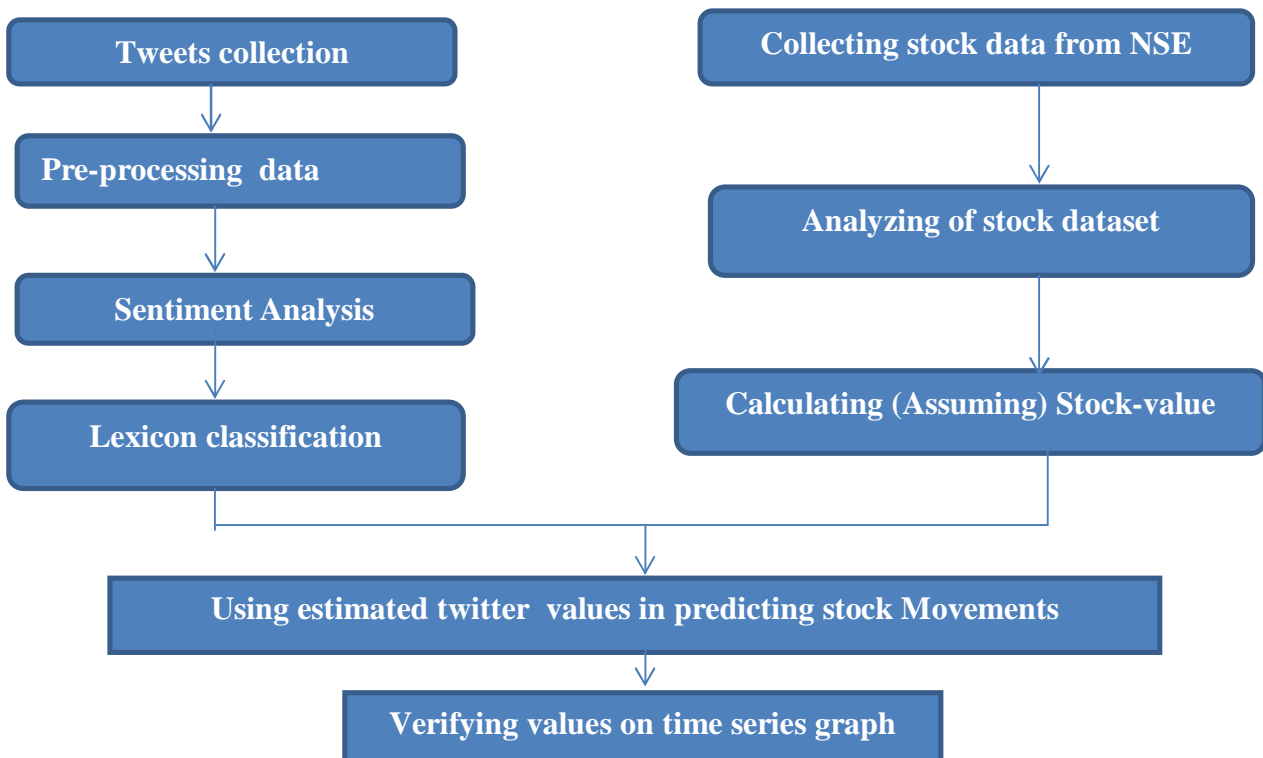


Figure 1.Detailed Methodology

We applied the systematic, theoretical analysis of the methods and principles associated within paper.

## **PAPER METHODOLOGY FOLLOWS AND DEFINES**

1. "The analysis of the principles of methods, rules, and postulates employed in our paper."
2. "The study of methods that are, can be, or have been applied within our paper."
3. "The study or description of methods."

The collected stock related tweets are preprocessed to avoid bias in data representation and applied sentiment analysis and lexicon classification techniques. Next collected NSE dataset and analyzed the every domain of the dataset and assumed the stock value by calculating the mean value of every domain like Opening price, High, Low, Closing price, Shares Traded, Turnover.

For the implementation of paper, we installed and opened Anaconda prompt and presented in Jupiter notebook. Uploaded stocks dataset file(csv) to jupyter and continued with python programming language for execution. After uploading dataset file, we displayed stock dataset in jupyternote book by python

programming by importing necessary libraries. Calculated mean value and assumed next stock values.

Further we continued with estimated twitter values and assumed stock values in predicting stock movements and represented results and output in a graph form. It is the general research strategy that outlines the way in which research is undertaken and among other things identifies the methods used in it. And these methods, described in the methodology, define the means of data collection and how a specific result is calculated.

## **DESIGN & RESULTS**

In our paper, twitter as a tool for forecasting stock market movements. At first we gone through twitter data (tweets) design process and second stock data design process individually and next applied Vader algorithm for predicting stocks using twitter data.

## **DESIGN PROCESS IN TWITTER DATA**

We used data mining techniques for collecting twitter data from Google trends pre-processed to get stock related data and applied sentiment analysis and lexicon classification technique. we used **vader sentiment algorithm**. By this we classify them as positive, neutral or negative.

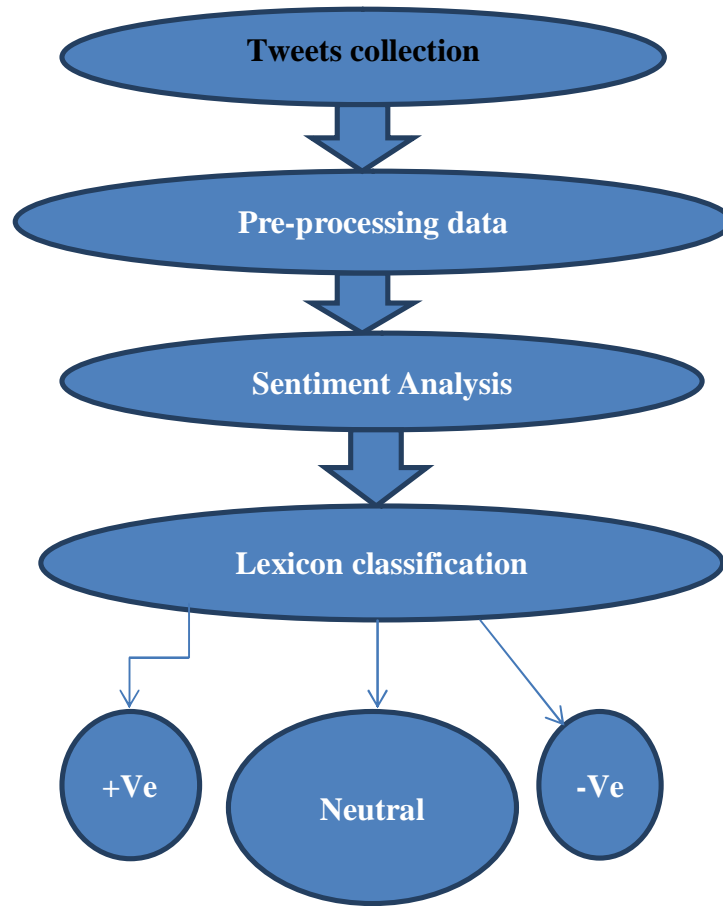


Figure 2.Classifier

Design process of stock movements

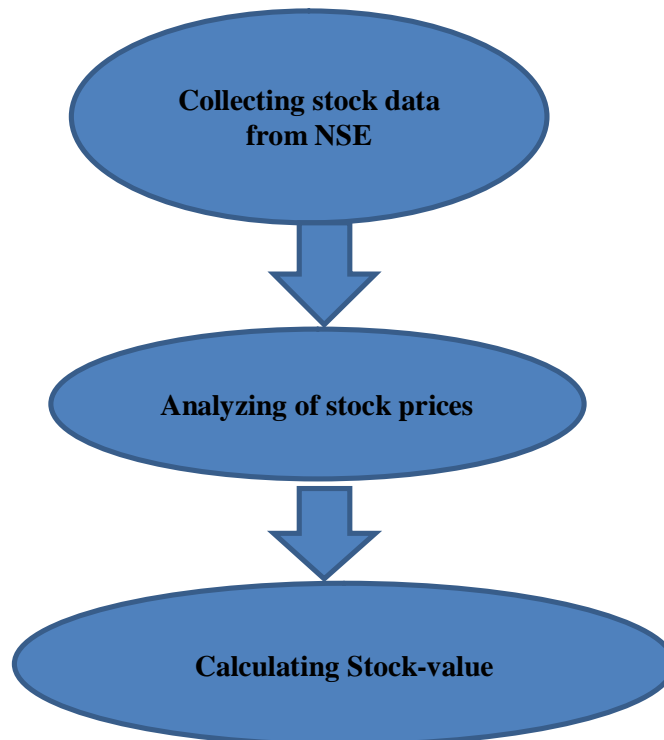
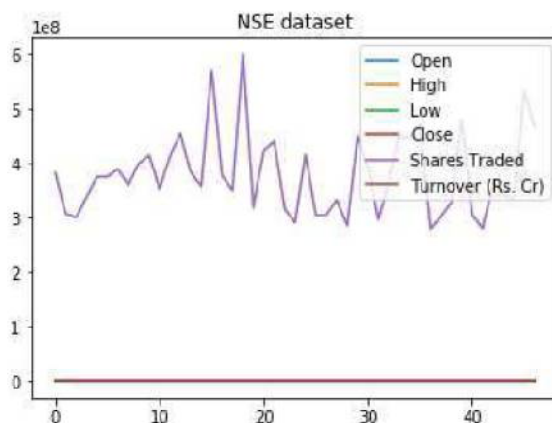


Figure 3.Stock Value Computation/ Design process of stock movements

Then collected NSE dataset and analyzed the every domain of the dataset and assumed the stock value by calculating the mean value of

every domain like Opening price, High, Low, Closing price, Shares Traded, Turnover.

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In [9]: import matplotlib.pyplot as plt
tweets.plot()
plt.title("NSE dataset")
plt.show()
```



In [ ]:

In [ ]:

Figure 4. Stock Market Variations

## CONCLUSION

We have corroborated the results of the original paper and shown that, even with much simpler sentiment analysis methods, a correlation between Twitter sentiment data and stock market movement can be seen. We have discovered that the best results arise when Twitter data predates the market data by about 3 days and created a model capable of making predictions based on this data. Based on our paper result, we hope this lays the foundation for the further future research into, how Twitter sentiment might be used to predict movements of a stock or sector and yield promising insights into potential practical applications for the project. Since, Twitter has growing exponentially as a medium to share ideas and thoughts on investing decisions. This research attempts to build "Twitter as a tool for forecasting stock market movements with Rumor Identification."

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