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Prediction of Closing Price in the Stock Market

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ABSTRACT : Stock market prediction is a act of determining the future value of market stock.The prediction of a stocks future price could yield significant profit.However, the closing price of financial stock market is hard to predict because of its dynamic and unpredictable nature.These changes happen because of many internal and external factors.The proposed system attempts to approximately predict the closing price of the stock market.

KEYWORDS: Natural Language Processing, Content Analysis and Indexing, Data Mining, Artificial Intelligence.

I. INTRODUCTION

Economic growth and stability of a country is greatly affected by the changing trends in stock market.Stock market is a place where people can buy and sell stocks. People tend to purchase a stock when the price falls down and sell it when the price goes high. There are wide range of factors affecting stock market which includes internal as well as external factors.The internal factors refers to company specific information such as change in management or ownership , dividend yields , earning per share ,etc. The external factors are government policies , rules and regulations , money supply, natural disasters, inflation , etc . which occur at any moment.The proposed system attempts to approximately predict closing price of the stock market on the basis of external factors.Usually the information regarding the external factors is published in media . News and social networking sites are sources from where the information related to the factors affecting the stock market is retrieved and appropriate processing and analysis techniques are applied .The system helps fund managers ,stock brokers and analysts to predict future stock prices efficiently.

II. RELATED WORKS

In [1], the closing price of the Dubai Financial Stock Market is predicted using the two data mining approaches of supervised and unsupervised algorithm.This model can predict the closing price using classification algorithm with an accuracy of 92%.In [2],analysts look for the previous day's stock information such as opening, day high, day low and closing price that is obtained from NSE(National Stock Exchange). Stocks are analysed based on three important aspects which are environmental, fundamental and technical using data mining techniques.In [3], news acquired from twitter data plays an important role.The tweets are classified into categories(Positive+, Positive , Neutral, Negative, Negative-) using NLP techniques which discovers the patterns between the public sentiments and the stock market price.An average accuracy as high as 76.12% is obtained.[4] uses dataset that contains news messages and the reaction of these messages on stock market. Machine learning algorithm is used to classify the text to predict the stock market reactions. Automated classification of news includes using text mining approaches that translates the unstructured data into a machine readable format.[5] considers market sentiment and uses textual information to overcome the limitations of financial time series forecasting such as noisy, non-stationary, chaotic data and presents a novel text mining approach by combining ARIMA(Autoregretive Integrated Moving Average) and SVR(Support Vector Regression) to

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improve forecasting accuracy.[6] illustrates the way in which data is extracted from raw text and how this information is then converted into event sequences. Decision tree learning technique is used in evaluating the trends in stock market. A predefined set of keywords is formed which involves keywords related to stock market and access and collects incoming new or even unseen data for the purpose of prediction.In [7], groups are exposed to three different types of test environments which had specific solution that would perform well in environment with varying conditions than in test environment. It includes groups of trained data for specific environment which leads to future research focusing on agent's behaviour and decisions in financial markets.The problems with [8] are large amount of data,noisy data and there may be a large or small difference in two continuous sets of data. To overcome these problems a data mart is constructed which reduces size of data approximately from 600MB per day to 1MB per day and a fuzzy grey prediction function is used to predict the possible answer immediately.In [9],a hybrid model of ANN(Artificial Neural Network) and GA(Genetic Algorithm) is used to predict stock price index using feature discretization approach to overcome the limitations such as noisy data and complex dimensionality. The paper [10] proposes a system in which data is collected from website processed to which positive,negative and neutral labels are acquired. Natural Language Processing is done on this data. Finally, the training and testing is done by Support Vector Machine. In [11], the data from Stock exchange is taken which includes a set of reducts and trading rules.Accuracy of 80.4% is attained.

III. PROPOSED SYSTEM

The proposed system attempts in approximately predicting the closing price of the stock market considering the external factors.The proposed algorithm takes live RSS Feed Data ,filters the data forming a key value pair and sends this to the processing mechanism which normalizes the news data into numerical and compares it along with the historical value and gives the closing price of stock market.

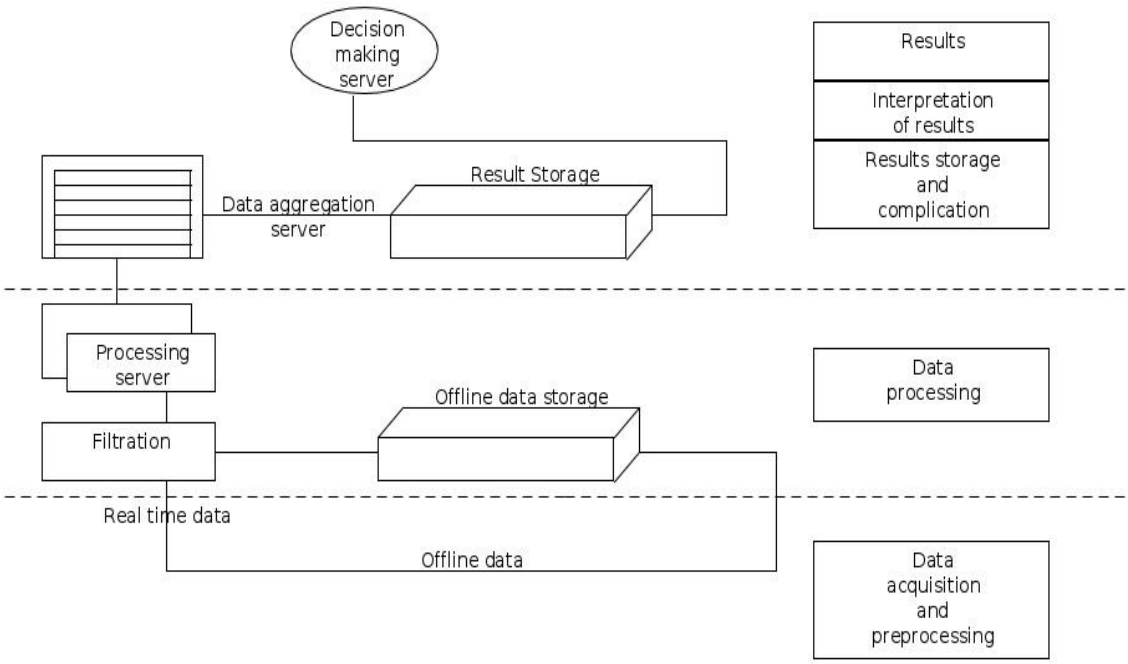

figure 1 : System Architecture

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The proposed system consists of four modules :
1.) Data Acquisition : News data related to stock market can be acquired from RSS feed. RSS(Rich Site Summary) uses a family of standard web feeds formats to publish frequently updated information such as blog entries, news headlines, audio and video.RSS feed benefits users who want to receive timely updates or to aggregate data from many sites

2.)Data Preprocessing: Discarding noise, limiting the data, pattern checking, filtering are the phases of this module.

3.)Knowledge Extraction and Analysis: In this phase, analysis of the data related to stock market is analyzed through NLP(Natural Language Processing). Sentiment analysis is carried out based one the positive and negative output values.

4.) Decision Making: Taking into consideration all the factors and also the previous day stock market's open, close, high and low values prediction of closing price of stock market is found.

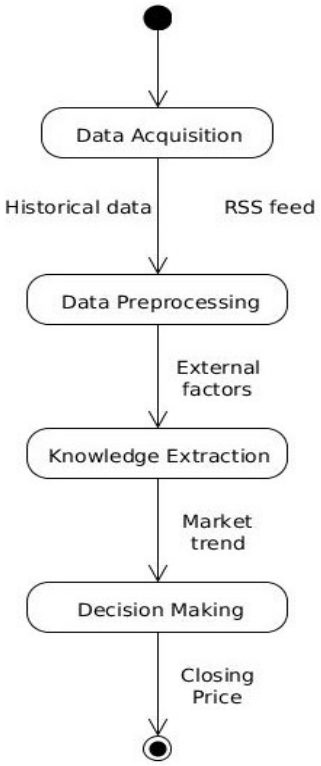

figure 2 : Activity Diagram

IV. CONCLUSION

This study involves predicting the closing price of stock market based on external factors using data mining techniques. This model calculates the closing price of stock market based on previous days open, day high, day low and closed price. The proposed system builds a model for predicting the closing stock prices for analysts and investors to plan their future opportunities well .

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