Stock Market Prediction Using Machine Learning

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Abstract: In this report we get to learn the existing and the new developing methods of stock market prediction. To understand this, we learn about three different approaches: Fundamental analysis, Technical Analysis, and the application of Machine Learning. We find evidence in support of the weak form of the Efficient Market Hypothesis, that the useful information is not present in the historic price but out of sample data may be having an event or result. We show that Fundamental Analysis and Machine Learning can be used as a guide to affect the investor's decisions. We demonstrate that thereis common problem in Technical Analysis methodology and show that it produces limited useful information. As we get various information based on it, development of algorithmic trading programs areto be done and simulated using Quantopian.

Technical Keywords: Stock Prediction, Data Analysis, Natural Language Processing, Machine Learning.

I. INTRODUCTION

Investing in stocks is one of the most rated businesses for making money in middle class investors. It is then the actual trading business of high-class investors and traders. Share price of the company is most important point for investor which always keepsgoing up and downwards. Everybody's eyes have to always be present on the live price of share market and quick decision making is necessary to prevent the loss of money and gain maximum possiblemoney. For this one hasto study the company's financial history and go through the future agenda.

Dependent on overall information and study related to market and company you can decide whether to invest or not to invest. But you have limits to study because one cannot be 100% sure that the study and analysis is correct. Company's market history, ability of company in maintaining business in any period or slack, different policies and announcements are the key points of Stock Rate. It is difficult field of work and in order to become a successful investor needs lots of experience.

II. REVIEW

Stock Market Predication Using a Linear Regression
The serious issue that the investors and the commercial stockholders are facing is to read the daily behaviour of the stock market. If this is possible it would help them to invest with further confidence by taking different threat take all aspects into consideration. In this paper by applying linear regression for forecasting the behaviour on the TCS dataset, we prove that are proposed system is best in comparison to the various regression techniques methods. The stockholders will get the confidence in investing in various different stocks.

Predicting Short-Term Exchange Rates for Automatic Purchasing using News Article Data
Recent times, adding online securities companies has led to a massive increase in the number of investing in stock and foreign exchange requests by individual investors. For individual investors, textbook data similar as newspapers and websites is a familiar and easy source of information. In addition, machine knowledge ways for stock request forecast have attracted important attention by using text data as well as numerical data.

Due to the small number of studies on exchange rates, it also increases the demand for supporting exchange investment. This paper introduces a new system to predict short- term price movements of exchange using machine literacy ways by exercising online news papers. In this work, our proposed system can detect the connections between newspapers and exchange rate oscillations. likewise, we apply foreign exchange auguring to automatic purchasing systems, and we corroborate the mileage of the proposed styles support for exchange investment.

Real-Time Sentiment Analysis of Twitter Streaming data for Stock Prediction

In this study, an attempt has been made for making different opinions similar as stock market predictions, to predict the implicit prices of a company's stock and to serve the need of this, Twitter data has been considered for scoring the print that's carried for a particular establishment. Streaming data proves to be a continuing source of data analysis collected in real-time. Streaming data principally deals with the nonstop inflow of data which carries information from sources like websites, mobile phone operations, garçon logs, social websites, trading bottoms, etc. The major characteristics of similar data being its availability and vacancy help in proper analysis and prediction of user behavior in a ceaseless manner.. The classifying model made out of literal data can be relentlessly honed to give indeed more accurate results since its outgrowth is always compared to the coming crack of the timepiece. Spark streaming has been considered for the processing of humongous data and data ingestion tools like Twitter API and Apache Flume have been further enforced for analysis

Stock Market Prediction Using Machine Learning

In Stock Market Prediction, the end is to predict the coming value of the financial stocks of a company. The recent trend in stock market prediction technologies is the use of machine literacy which makes predictions based on the values of current stock request indicators by training on their former values. Machine learning itself employs different models to make prediction easier and authentic. The paper focuses on the use of Retrogression and LSTM grounded Machine knowledge to prognosticate stock values. Factors considered are open, close, low, high and volume.

Improving Traditional Stock Market Prediction Algorithms using Covid-19 Analysis

The stock request is a organized body where public companies offer their stocks through original public offerings and dealers buy/ sell these stocks so as to gain earnings. It's dynamic and changeable in nature which makes the task of stock request trend prediction a complex problem. In recent times, the COVID-19 epidemic has made this task indeed harder. With the rising number of COVID-19 cases across the globe, the request has no way been more unpredictable. This has redounded in the poor performance of colorful traditional trend prediction algorithms because these algorithms don't regard for the impact of the epidemic on the stock request trends. The proposed work aims to enhance the stock request prediction capability of colorful common prediction models by taking into account the factors related to COVID-19. The soothsaying ways anatomized are Decision Tree Regressor, Random Forest Regressor and Support Vector Regressor(SVR) .Presently the most affected countries by COVID-19 are the United States of America, India and Russia. thus we've anatomized the vaticination performance of colorful approaches bandied in this paper on S&P 500 Index, Nifty50 Index and RTS Index using Root Mean Square Error(RMSE) and Mean Absolute Chance Error(MAPE). Results attained show that all the ways used perform better when the COVID-19 features were included.

III. METHODS

1) Fundamental Analysis: Fundamental analysis involves the examination of profitable factors that impact the price of a stock. similar factors include a balance distance and income statement. The balance distance is a financial statement that provides information about a company's means, arrears as well as the equity of their shareholders at a specific point in time. Basically, the balance distance gives intel into what a company owns and owes and the quantum investors have invested in it.

2) Technical Analysis The thing of technical analysis is to anticipate what other stock holders are allowing based on available information about the price and volumes of stock. Technical judges use a number of different types of pointers calculated from the once history of stock price and volume to predict unborn prices. Overall, the key to technical analysis is trend. Practitioners of technical analysis argue that trends in stock prices are caused by an imbalance between the supply and demand of stocks, which is reflected in the shot and ask prices. From the noisy data of stock prices, technical judges essay to prize patterns.

3) Quantitative Specialized Analysis This qualitative aspect to our alternate academy of study is what differentiates it from our coming methodology. As suggested by its name, this form of stock vaticination relies on quantitative styles of vaticination rather than visualizations on graphs.
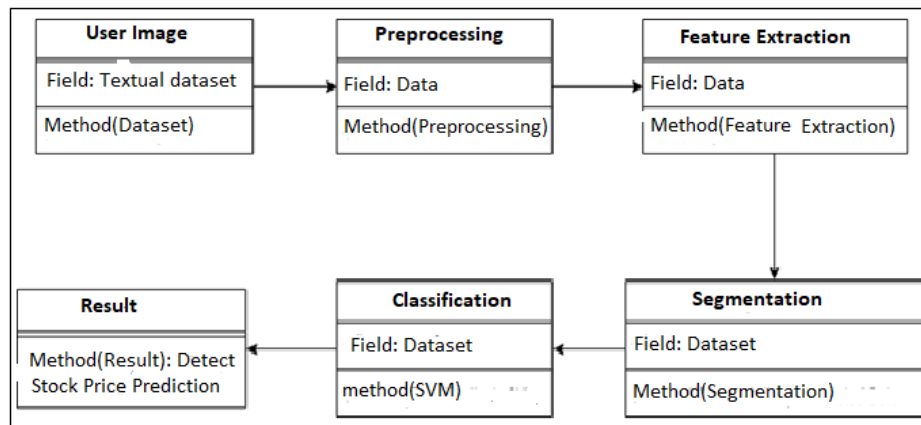
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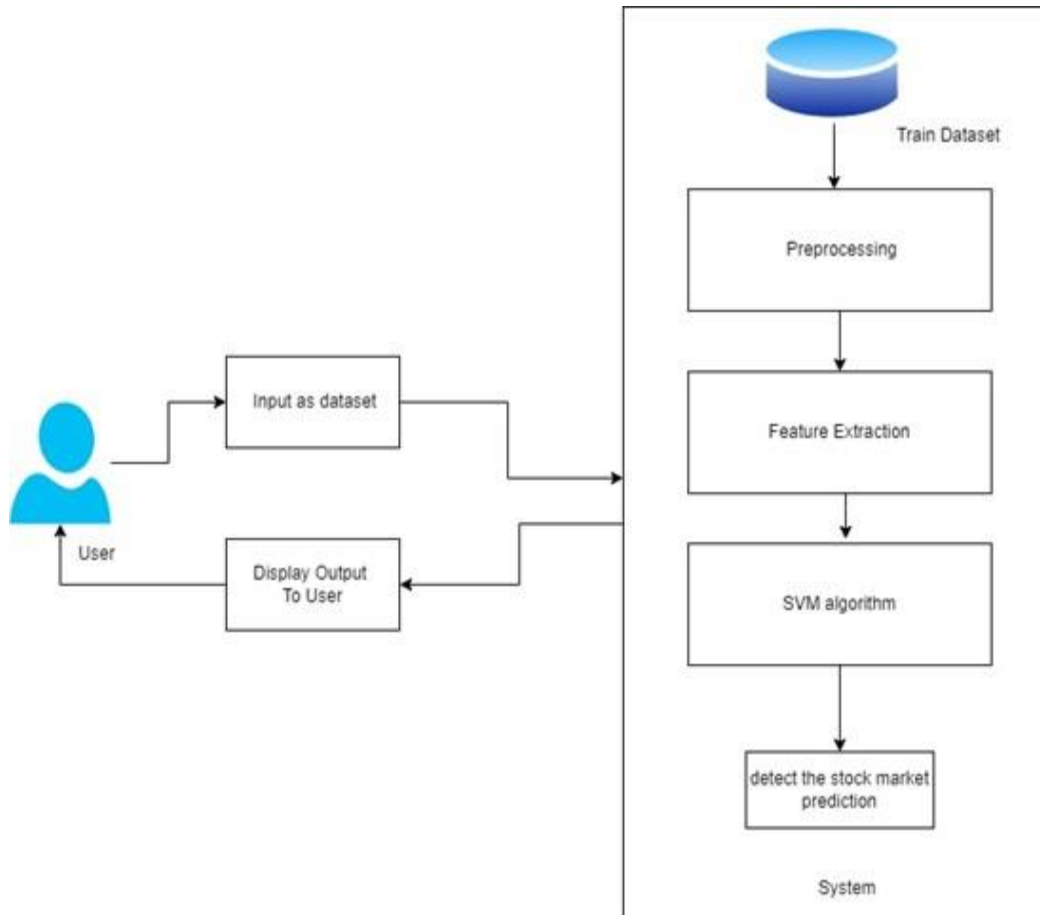
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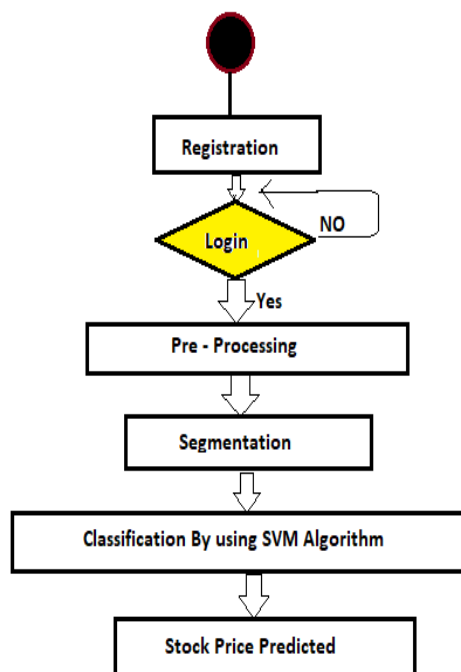
Data Flow Diagram

IV. RESULTS

SVM Algorithm

Support Vector Machine(SVM) is a supervised machine learning algorithm used for both classification and regression. Though we say regression problems as well its best suited for bracket. The ideal of SVM algorithm is to find a hyperactive aeroplane in an N- dimensional space that distinctly classifies the data points. The dimension of the hyperactive plane depends upon the number of features.However, also the hyperactive plane is just a line, If the number of input features istwo.However, also the hyperactive plane becomes a 2- D plane, If the number of input features is three. It becomes delicate to imagine when the number of features exceeds three.

Types of SVM
SVM can be of two types
1. Linear SVM: Linear SVM is used for linearly separable data, which means if a dataset can be classified into two classes by using a single straight line, also similar data is nominated as linearly divisible data, and classifier is used called as Linear SVM classifier.
2.Non-linear SVM: Non-Linear SVM is used for on-linearly separated data, which means if a dataset can not be classified by using a straight line, also similar data is nominated asnon-linear data and classifier used is called asNon-linear SVM classifier.

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