STOCK MARKET PREDICTION USING MACHINE LEARNING ALGORITHM

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Abstract - *stock exchange prediction is that the act of trying to work out the longer term value of a corporation stock or other financial instrument traded on a financial exchange. The successful prediction of a stock's future price will maximize investor???S gains. This paper proposes a Machine Learning (ML) approach which will be trained from available stocks data, gain intelligence then uses the acquired knowledge for accurate prediction. After the through research of varied algorithms and their fitness for various problem domains. The programing language is employed to predict the stock exchange using machine learning is Python. During this context this study uses a machine learning technique called Support Vector Machine (SVM) and rectilinear regression (LR) to predict stock prices for the massive and little capitalizations of Stock prices with both daily and up-to-the-minute frequencies. We are getting to use both data processing algorithms and that we will decide which algorithm gives the simplest end in future prediction.*

Key Words: **Machine Learning, stock exchange, Predictions, rectilinear regression, Support Vector Machine.**

1. INTRODUCTION

The trend available market prediction isn't a replacement thing yet this issue is kept being discussed by the varied organisation. There are two types to research stocks which investors perform before investing during a stock, first is that the fundamental analysis, during this analysis investors check out the intrinsic value of stocks, and performance of the industry, economy, political climate etc. to make a decision that whether to take a position or not. On the opposite hand, the technical analysis it's an evolution of stocks by the means of studying the statistics generated by market activity, like past prices and volumes.

Being able to predict accurately the longer term financial outcome is like earning pile . This paper aims at analyzing this problem in a tutorial way which provides a special way of prediction on the market trend. within the recent years, increasing prominence of machine learning in various industries have their enlightened many traders to use machine learning techniques to the sector , and a few of them have produced quite promising results. This paper will develop a Stock data prediction program there'll be dataset storing all historical stock prices and data are going to be treated as training sets for the program. This project aims at

developing a program which serve best solution for accurate predicted stock result.

Within the beginning Artificial Neural networks (ANNs) and ARIMA (Auto Regressive Integrated Model) is that the most ordinarily used techniques. In most cases ANNs suffer from over-fitting problem thanks to the massive number of parameters to repair . In most cases ARIMA model are difficult to know and typically computationally expensive.

Support vector machines (SVM) and rectilinear regression (LR) had been developed as an alternate that avoids such limitations. rectilinear regression (LR) is straightforward to implement and wont to predict numeric values. Support Vector Machines (SVM) is effective in high dimensional spaces and works with clear margin of separation.

Using some rules and predict the longer term price of shares by calculating an in depth price. within the Real time prediction compulsory used internet and saw current price of shares of companies. We are getting to use both data processing algorithms and that we will decide which algorithm gives the simplest end in future prediction.

2. METHODOLOGY

In this paper the prediction of stock exchange is completed by the Support Vector Machine (SVM) and rectilinear regression algorithm.

2.1. Support Vector Machine

A Support Vector Machine (SVM) may be a discriminative classifier that formally defined by the separating hyperplane. In other words, the given labelled training data (supervised learning), the algorithm outputs the optimal hyperplane which categorizes new examples. within the two-dimensional space this hyperplane may be a line dividing a plane into two parts where in each class lay in either side.

Support Vector Machine (SVM) is taken into account to be together of the foremost suitable algorithms available for the statistic prediction. This supervised algorithm are often utilized in both, regression and classification. The SVM involves plotting of knowledge as point within the space of n dimensions.

These dimensions are the attributes that are plotted on particular co-ordinates. SVM algorithm draws a boundary over the info set called because the hyper-plane, which separates the info into two classes as shown within the Fig 1.
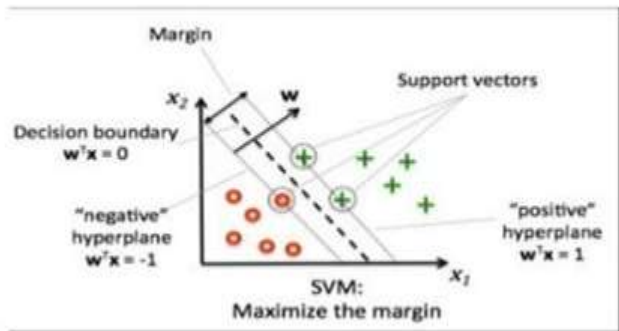

Figure -1: The Support Vector Machine deciding Boundary.

The hyper-plane may be a decision boundary which is later extended or maximized on either side between the info points. Considering an equivalent figure, if µ is a few unknown datum and w is vector which is perpendicular to the hyper-plane, then the SVM decision rule are going to be

$$w^-(u)^-+b≥0 \qquad (1)$$

The width w of the hyper-plane must be maximized to extend the spread

$$W=[2/‖w‖] \qquad (2)$$

$$W=\max[2/‖w‖] \qquad (3)$$

Applying LaGrange's multiplier as

$$L=0·5‖w‖^2→-\sum α\_i [y\_i (ω\_j x\_i+b)-1] \qquad (4)$$

$$L=\sum α\_i-0.5\sum\_i \sum\_j 〖α\_i α\_j y\_i y\_j x\_i x\_j 〗 \qquad (5)$$

The updated decision rule are going to be

$$(\sum α\_i y\_i x\_i)u+b≥0 \qquad (6)$$

2.2. Rectilinear regression

Rectilinear regression is one among the foremost common data processing techniques for predicting the longer term value of variable supported the linear relationship. Basically, it assumes there's a line that approximates the info set, and bases the forecast thereon

Rectilinear regression may be a method wont to model a relationship between a variable (y), and an experimental variable (x). with simple rectilinear regression there'll only be one experimental variable x. There are often many independent variables which might fall into the category of multiple rectilinear regression . we will only take one experimental variable . so as to know rectilinear regression , you want to understand a reasonably elementary equation. one among that defines a straight line:

$$y = a + bx \qquad (1)$$

Where:

y = the anticipated value or variable

b = the slope of the road .

x = the coefficient or experimental variable .

a = the y-intercept.

Moreover, the smallest amount square method is used find the regression curve . the smallest amount squares method is expressed as:

$$y = a + bx \qquad (2)$$

Where

$$a=\bar{y}-b\bar{x} \qquad (3)$$

$$b=(n\sum xy-\sum x\sum y)/(n\sum x^2-(\sum x)^2) \qquad (4)$$

In accordance with this paper, each variable denotation is as follows:

y = current market value

x = percentage earning (P.E) ratio

$\bar{y}$ = Mean occurrence of current market value

$\bar{x}$ = Mean occurrence of percentage earning (P.E) ratio

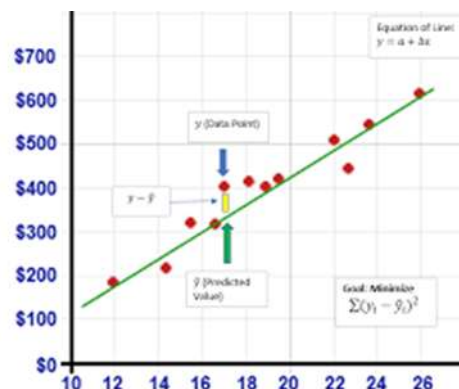n = Total number of occurrences of the variables.

Figure 2: example graph for Predicting stock price with rectilinear regression.

The above figure 2 shows that the rectilinear regression prediction graph. Like this our output are going to be come. In rectilinear regression
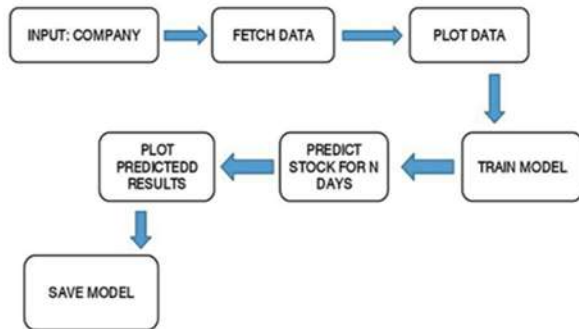
3. ARCHITECTURE DIAGRAM

Figure 3: Architecture of the model

4. IMPLEMENTATION

Stock Dataset is collected in web like yahoo, chrome, etc... Initially dataset is to be pre-processed. After Pre-Processing then to classify the processed data sets, and it's split into train data and test data. Train data are to be trained under the certain model of Machine Learning algorithms like Support Vector Machine (SVM) and rectilinear regression (LR). The test accuracy are to be calculated by the test data. we'll test and evaluate both the algorithms with same test data to seek out their prediction accuracy.

Company	Symbol
Google	GOOGL
Apple	AAPL
Microsoft	MSFT
Amazon	AMZN
Tesla	TSLA

We'll use this data to predict and forecast the worth of n-days into the future. Then we'll use the simplest Machine Learning Algorithm to predict the longer term stock values in any company stock or other financial instrument traded on a financial exchange.

The above screen shot shows that some companies symbol, using that we will collect the previous data sets used for predicting future values.

Sample paragraph Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

5. RESULT

During this paper shows that the simplest accurate algorithm for locating stock exchange prediction. Comparing to both Support Vector Machine (SVM) and rectilinear regression (LR) find which is that the best accuracy. rectilinear regression is that the best method to predict the longer term values because it gives the high accuracy comparing to SVM.

Results of the model is calculated on the stock data of the businesses using rectilinear regression algorithm. Dataset utilized in prediction is obtained live data from yahoo Google URL and stored dataset. Graph is plotted showing prediction accuracy.

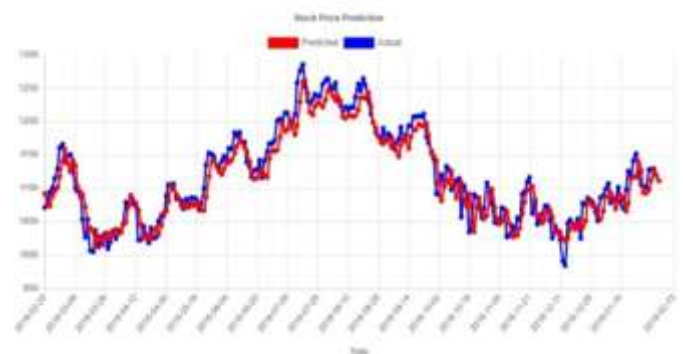Results showed that the accuracy up to 98% is achieved.

Figure 4: Google stock price prediction using rectilinear regression algorithm.

6. CONCLUSION

Within the project, we proposed the utilization of the info collected from different global financial markets with machine learning algorithms so as to predict the stock market index movements. supported the results shown and experiments performed, it's evident that input file plays a crucial role in prediction along side machine learning techniques.

In this paper, we were ready to use multivariate analysis as a knowledge mining technique to explain the trends of stock exchange prices and predict the longer term stock exchange prices.

Thus, we will see in our proposed method, we train the info using existing stock dataset that's available. The current system can update its training set as every day passes so on detect newer trends and predicts stock in real time. We use this data to predict and forecast the worth of n-days into the longer term.

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