A FUSION APPROACH AIMED AT FORECASTING OF STOCK PRICE EXCHANGE USING SUPERVISED MACHINE LEARNING ALGORITHM

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Abstract. Machine Learning is used in many data analytics problems to predict the future with more accuracy. The prediction of the trends of stocks and index prices are important issues to market participants. One of the best important factor is Stock market which fascinates the money makers to make the investment so that there is a development of financial growth across the country. Stock exchanging volume incorporates the quantity of parts purchased and sold which is communicating in regular routine i.e, daily basis. In the proposed work, the main objective is to predict the trend of Facebook stock exchange using s and p indexes by using various Machine Learning algorithms. To achieve the results, the suggested work uses a supervised Machine Learning algorithm. At the same time the arcade of Facebook stock is predicted in terms of either positive or negative. The result shows that it is possible to effectively predict the performance of Facebook stock exchanges.

Keywords: Supervised Learning, Neural Network, Big data, Prediction, s and p index.

1. INTRODUCTION

The share market exchange and stock is a dynamic mechanism and it is difficult to recognise due to many requirements which adjust the regular value. For staff of that specific arcade, exploring the advancement of stock is important work. They made attempts to use various stock approaches to find progress.For this a database containing different characteristics such as day, high value, lower price, ending price, etc was regarded. In the proposed work, the database was built from the digital insights present. The S and P indexes were determined to see all the market pattern during the next 30 days. The method of regression and classification plays a key role in the paper. It is essential to obtain stock progress with the use of classification and other regression algorithms and it is able to ascertain whether to purchase the product or whether to purchase it. Fewer people with a lot of experience will take the value of the metrics and are using them to make better fortune. To earn lots of money from trading stocks, many people are

dependent on chance. This innovation offers an opportunity to lift well from stock and can assist stock managers to produce further inflows.

Money firms spend a great deal of time and acquired a lot of share value information and expertise in order to trigger and decrease their expenditure. If a machine can make stock prediction quite precise, then this arcade will be trusted by customers and they will spend their money on their products. Accuracy and Precision are the two significant indicators of stock market region prediction. Most authors have used systems set of mathematical, statistical, probabilistic, and time series techniques to test data collected. Stock prices as determined by the company's investment bankers and arcading variables. Shareholders measured the company's progress and measured if they made the correct choice. In fact, this method can not represent required features, such as the psychological parameters of arcade performance, that alter stock prices. In the past, several researchers have tested the emotions of shareholders in the finance arcade, such as media, knowledge if people share what effective tactics they have. Many companies have performed attempts to estimate the price of the inventory region. In computer engineering, researchers have proposed different methods to generate knowledge regarding stock.

2. LITERATURE SURVEY

Shah et al. have proposed, progression of the arcade area of the Facebook Stock area by using S and P indexes and ML techniques based on previous returns [1]. In order to find which algorithm is working better, different machine learning strategies are compared. In addition, the approach often seeks to figure out which parameter is better suited to the arcade routine. The interpretations suggest that the growth of the Facebook stock exchange can be easily predicted by using machine learning technology [2, 23]. The authors in [3] built a strong and best approach that uses heuristic sliding-window optimization to interpret Taiwan companies' stock prices. T.H. Roh et al. have suggested the methodology to forecast the box office takings for movies and sales results, It has taken the Twitter.com inventory. The authors analyse the dissimilar films in Step 1 and how they adjust with regard to time changes. The authors concentrate on the viral arcading process in phase 2 and pre-release hype on Twitter. The theory is created and tested in well-talked and watched films [4]. There are peaks and valleys in the volatility of stock price of KOSPI (Korea based Composite Stock index) has been taken in to consideration for prediction. The current model considers only a single replica, while in[5], instead of the ARCH GARCH models, the authors suggested the ANN system. A hybrid technique was proposed in which a price marketing moment in the stock region is used to deal with enormous quantities of data from the financial time series. Both Adaptive Period Neural Networks (ATNNs) and Period Delay Neural Networks (TDNNs) have been combined to predict better stock prices in temporary shapes of stock data. This combined approach also uses the Genetic Algorithms [6]. In [7],the researchers used ANN for better prediction to work on optimum methodology for learning. The decision tree with two layer bias generators are used to solve nonlinear stock area problem that effectively identifies stock prices [8]. The closing price of two separate market areas, one from the Indian economy, the National Stock Area Exchange (NSE), the New York Stock Area Exchange (NYSE) took stock price prediction parameters as parameters. The network has been trained with NSE's single company arcade stock area price, and five separate companies from both NSE and NYSE are taken into account.

In terms of additional replicas, it is inferred that CNN performs well. Despite the fact that they were newly trained with NSE data, the network was strong enough to find NYSE data. [9]

In [10], the authors have developed a model to predict a period series, which uses the sliding window heuristic optimization technique. The limitation of the given method is its computational speed, since the validation of the sliding window requires broad mathematical circles implemented in the MATLAB software. The data set was taken from the Pakistan Stock Area Exchange, which is the Karachi Stock Exchange, and was used for stock prediction between June 1990 and December 2008. [11]. In this research paper the authors examined the price behaviour of the stock area of products in a time that was influenced by the history of the stock area. In order to analyse the stock data and the solutions used in different financial markets, the authors tried to combine both HMM and RNN.

The academicians have analyzed the Bombay stock price market and tried to research the daily excess yields of the BSE [12]. The Support Vector Regression (SVR) and other regression models were applied to dissimilar elucidation areas of American, Chinese stocks. Further studies suggest that for prediction, a greater figure of the test stock region was considered and additional predictive reproductions could also be compared, including classifying asset price values. Additional replicas are also suggested to be developed for up-to-date prediction [13]. In [14], the researchers focused on the Taiwan stock market values and using the probabilistic Neural Network language for stock exchange data index forecasting and movement. The prediction of stock price index is computed by using ANN (A multilayer perceptron (MLP)) with decision tree methods [15]. Other groups of authors have shown that there is no simple improvement in the greater return time area series.

The one-year-after Canadian stock area dataset prediction comparison of neural network prediction and logistic regression (LR) prediction was introduced in [16, 17]. The integrated approach is used in [18, 19]. The authors have worked on two neural area networks, which take the stock price index as input and the output is applied in multiple linearity regression for prediction. This approach uses both Mean Square Error(MSE) and Root Mean Square Error(RMSE) for optimization ,and it achieves good accuracy percentage. Three types of ML algorithms were discussed in [20]. In [21, 22] the researchers attempted to predict the diseases and classification of health care data were explained [23,24].

3. PROPOSED METHODOLOGY

From the literature survey, it has been observed that the parameters and features of stock area price has to be selected in a proper manner, so that the good prediction accuracy is achieved. A dataset is developed by using various surveys, review articles and online observations. The dataset contains different features like stock date, maximum, minimum close value, volume etc. Different types of classification and prediction models are used to evaluate the proposed work. In existing scheme various researchers have implemented met heuristic algorithms and matab which are not performed well. These frameworks did not provide good accuracy.
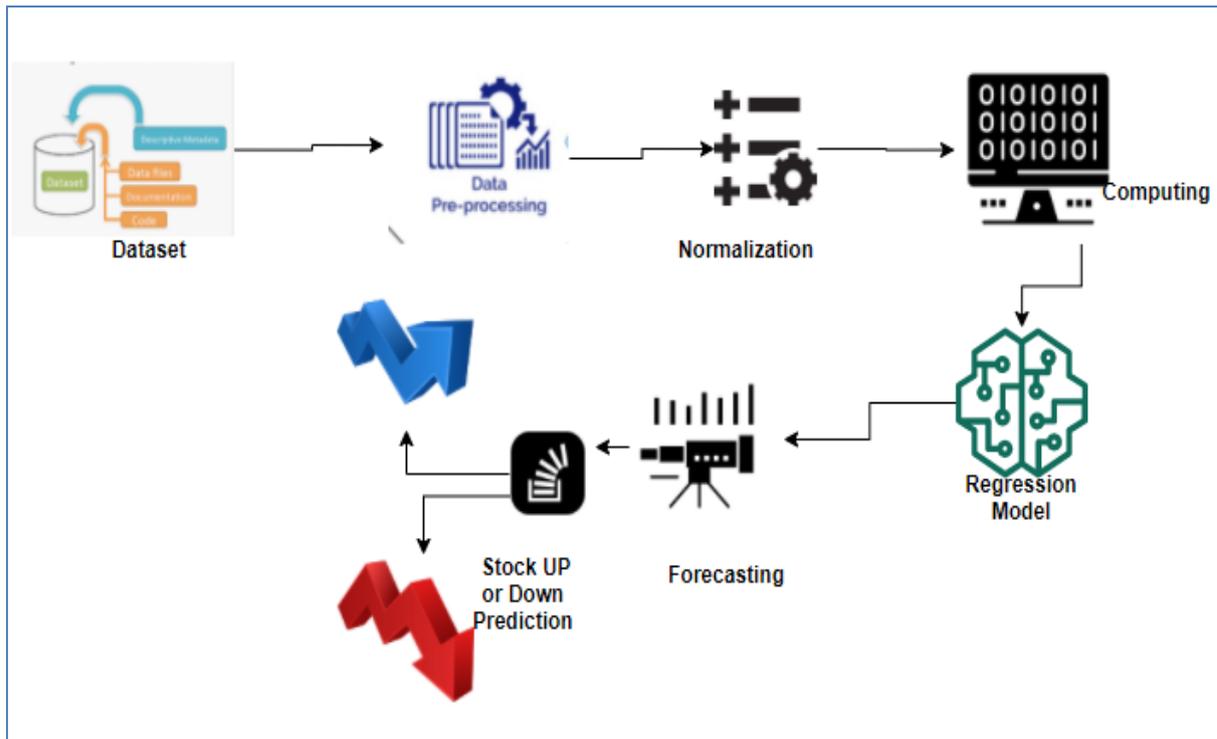
Figure 1. Functional diagram of proposed work

The Figure 1.Illustrates the overall function of the proposed system. The Facebook Stock price index dataset has given as input. Pre-processing is the first step which reduces skewness of data, and removing the outliers. After that normalization techniques are applied so that the data can be processed for getting the proper data. From the training data, S and p values were estimated, resulting in good prediction precision. The last step is analysing the data in terms of time series techniques. The proposed mode forecast the stock price in terms of day basis. After reviewing the data, the customer will determine whether it will be better to buy a stock or whether it is nice to sell the stock on the basis of advancement in the same stock index.

4. EXPERIMENTS AND RESULTS

The proposed work has used Facebook stock price dataset which has been derived from the official website. The modified near attribute is used to measure the value of S and P to obtain results. An arcade-capitalization-weighted guide recommended by leading U.S. companies is the S and P indexes.Gain of the SAP 500 is the main apparatus that is prevailing in the list is revised on a periodic no. A team of guidance followers decides which organisations to include in the table. Stored results in CSV files after measuring s and p values, so that CSV file can be used further for prediction. The time series analysis methods are implemented to get the better forecasting of stock index.
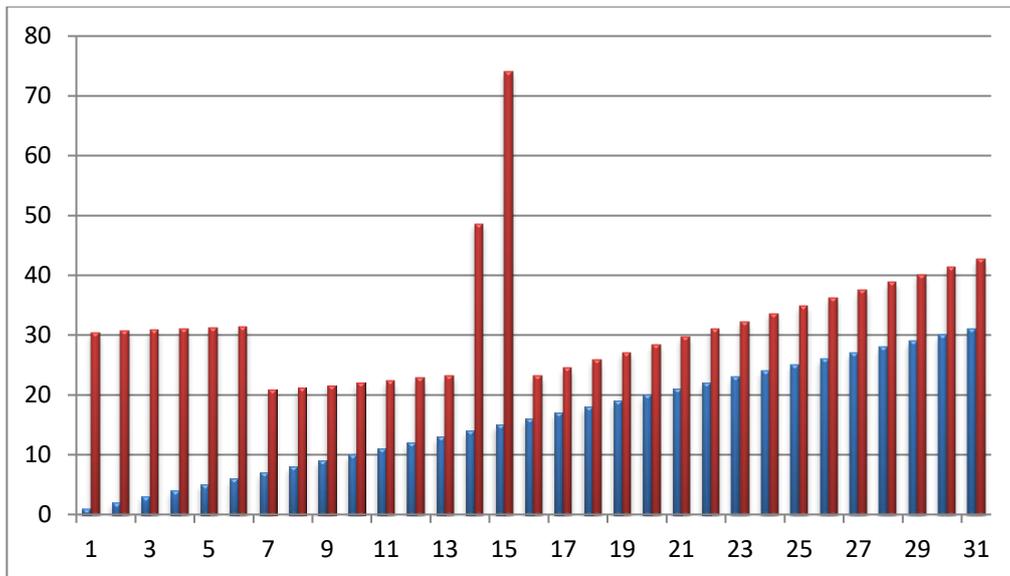
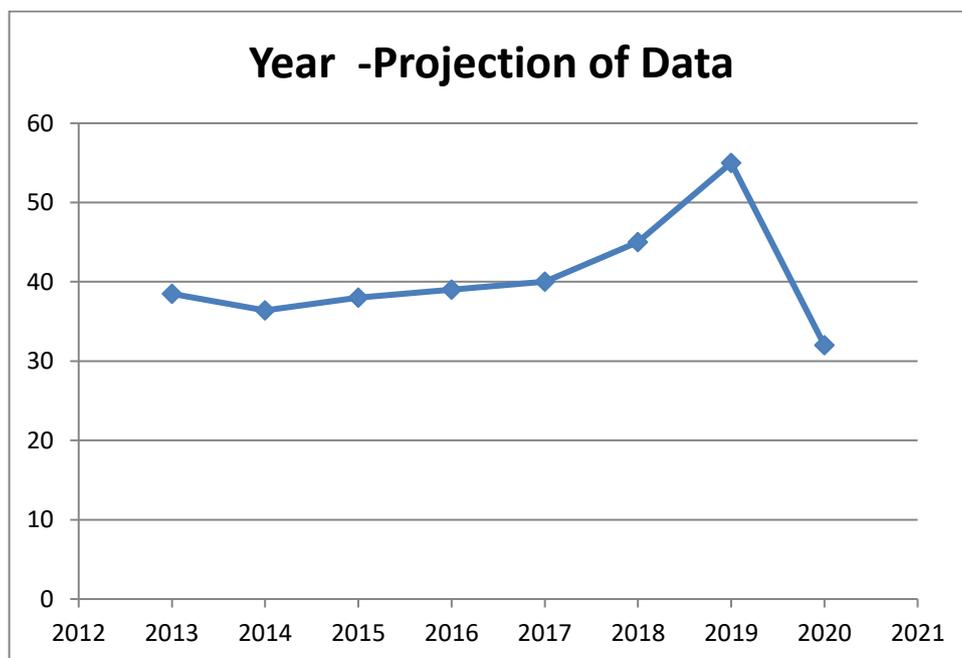**Figure 2**.Projection of Data in terms of Day wise of a week

Figure 3. Projection of data – in terms of Year

The results have shown in Figure 2 and 3 It is noted that the arcade trend would be good for inventory. The proposed method illustrates an annual trend, a weekly trend, using annual data. When looking at the overall trend and seasonality trend, seasonality plays a major role in the time series inventory study, and seasonality comes into play at the starting and ending of the year. Figure 2. Illustrates lift the stock price on First January and the possible day in week to invest on Sunday, while stock prices are maximum on the above mentioned day. The visualization of yearly trends of stock has represented in Figure 3.

5. CONCLUSION

It has been observed that the extraction of important attributes from stock data is very important to forecasting the stock price index. In the proposed system, S and P values are computed from opening and closing balance of every day. These S and P values are important features for forecasting the SPI. After computation of S and P indexes, the necessary dataset is formed with four set of parameter list. Then we have applied ML algorithm to make the system to predict the SPI. The experimental results show that the proposed work is forecasting weekly trend, day wise trend and year trend in effective manner. The system also predicts the seasonality trend efficiently. The forecasting of next 30 days of stock price index is provided as graphs. The proposed work can be done by using the other advanced features to improve the prediction accuracy. It is possible to compare the market performance of various stock firms using Machine Learning algorithms. This will present a stronger stock pattern for a company such that users would spend accordingly. We will use different algorithms at the same time to produce these results, discovering the optimized possible algorithm for stock market forecasting for more accuracy.

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