Stock Price Prediction using LSTM Algorithm

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Abstract

This system would look at both conventional and modern stock market forecasting methods. It uses three distinct methodologies to solve the problem: fundamental analysis, technical analysis, and machine learning. This system find support for a weak version of the Efficient Market Hypothesis, which states that while historical prices are meaningless, out-of-sample data can predict future prices. It shows how Fundamental Analysis and Machine Learning can assist investors in making better investment decisions as well as it shows how Technical Analysis has a flaw and provides insufficiently usable data. Based on our findings, Quantopian is used to develop and model algorithmic trading programmes. This article makes use of the concepts of stock estimation, data analysis, natural language processing, and machine learning.

Keywords— *Stock Prediction, Data Analysis, Natural Language Processing, Machine Learning.*

I.   INTRODUCTION

One of the most common avenues for middle-class investors to prosper is by stock investment. Then there's the real market sector, which involves high-end customers and traders. The most critical point for investors is the company's share price, which is constantly fluctuating up and down. To avoid losing money and, of course, to make money, one must always keep an eye on the stock market's live price. To do so, you must first study the company's financial past and strategic objectives. System can invest only after doing a rigorous corporate and organisational study. As a result, you must define the criteria of the sample, because no one can promise that the test and analysis are right. The key points of Stock Rate are the company's industry understanding, proclivity to retain consumers during any time of slack, regulations, and announcements. To be a good investor, you must have a great deal of knowledge in this area.

II.   LITERATURE SURVEY

Combining of Random Forest Estimates using LSboost for Stock Market Index Prediction [1]. — The aim of this research is to predict future stock market index values using historical data. The empirical estimate is based on ten years of data from two Indian stock market indexes, the CNX Nifty and the S&P BSE Sensex. For the next one to five, fifteen, thirty, and forty days, forecasts are made. The article proposes combining the predictions/estimates of a Random Forest ensemble of trees using LSboost (i.e. LS-RF). The proposed model's prediction accuracy is comparable to that of the well-known Support Vector Regression. Technological parameters inform each prediction model. The average value is calculated using the stock's most recent sale price. The proposed scheme outperforms Support Vector Regression in terms of precision and can be used to construct mathematical models for market price prediction.

Analysis of Investor Sentiment and Stock Market Volatility Trend Based on Big Data Strategy [2]. — The aim of this paper is to investigate the fundamental mechanism by which investor sentiment

affects stock market volatility. It conducts a comparative analysis using Pollet and Wilson's volatility decomposition theorem and the volatility origins. This article constructs an insight database using data from the online news emotion index, site search volume, social network emotion index, and social network heat index. It eliminates variables with a direct connection to the stock market and incorporates them into forecasting studies after doing correlation analysis and Granger causality tests. The formula produces a market volatility index and analyse the connection between consumer trust and equity price volatility. In laboratory analysis, the variance between sale price and value is used as an explanatory element, and stock price uncertainty is quantified using the logarithmic return on the stock. In comparison to the stock market confidence index, the sharemarket volatility index has a higher predictive potential for the share market volatility turning point in a more volatile setting, especially for the one- to two-day decline turning point ahead of time, and is therefore critical for forecasting stock price volatility and risk management.

Literature review on Artificial Neural Networks Techniques Application for Stock Market Prediction and as Decision Support Tools [3]— The aim of this study is to examine the application of Artificial Neural Network (ANN) techniques to stock market forecasting. Content analysis was used as an experimentation tool in this design. This paper was compiled using data from ProQuest electronic databases. Evaluation techniques: We used core terms and phrases associated with Artificial Neural Network Stock Market Prediction from 2013 to 2018. Out of 129 scholarly articles reviewed, only four stock market papers follow the inclusion criteria. The forecasting research and estimation were conducted using six ANN derivatives techniques. As a result of the studies' research, it was discovered that ANN stock market predictions are highly accurate in both of them. Two tests indicate an accuracy of greater than 90%, and two indicate an accuracy of greater than 50%. According to this report, ANNs' ability to predict stock prices correctly is consistent. Four techniques for predicting stock markets are over 95% accurate. The Signal Processing/Gaussian Zero-Phase Filter (GZ-Filter) achieved the highest prediction precision of 98.7 percent.

Predicting the Effects of News Sentiments on the Stock Market [4]. — The usefulness of stock market forecasting in the preparation of economic operations could be overstated. Many scholars from various fields, including computer science, mathematics, economics, banking, and operations analysis, have been drawn to stock price prediction. Recent research has found that the overwhelming amount of publicly available online content, such as Wikipedia user patterns, mass media news coverage, and social media discussions, may have a measurable impact on investors' attitudes toward financial markets. Since the stock market is so vulnerable to the economy and can directly result in financial failure, the accuracy of statistical models for stock market prediction is critical. The results of news emotions on the stock market were retrieved, extracted, and reviewed in this article. The creation of a financial sentiment analysis dictionary, the development of a dictionary-based sentiment analysis model, and the assessment of the model for gauging the effect of news sentiments on stocks for the pharmaceutical industry are among our key contributions. We were able to forecast the patterns in short-term stock price activity with a positional precision of 70.59 percent using only press sentiments.

Prediction of Stock Market by Principal Component Analysis [5]. — Machine learning models face an intriguing problem when categorising high-dimensional data, as the presence of a large number of closely associated dimensions or attributes will minimize the classification model's accuracy. The paper investigates the problem of high dimensionality in the stock market and predicts market dynamics using principal component analysis (PCA) and linear regression. PCA can help improve machine learning approaches' predictive efficiency while reducing data redundancy. Experiments were carried out on a three-dimensional spectral model of the stock exchanges in New York, London, and Karachi. Before and after PCA, the precision of a regression analysis classification protocol is compared. The experiments show that PCA can greatly increase machine learning efficiency in

general if and only if the relative similarity between input features is investigated and the selected features are correctly chosen. The classification model is tested using the base mean standard errors (RMSE).
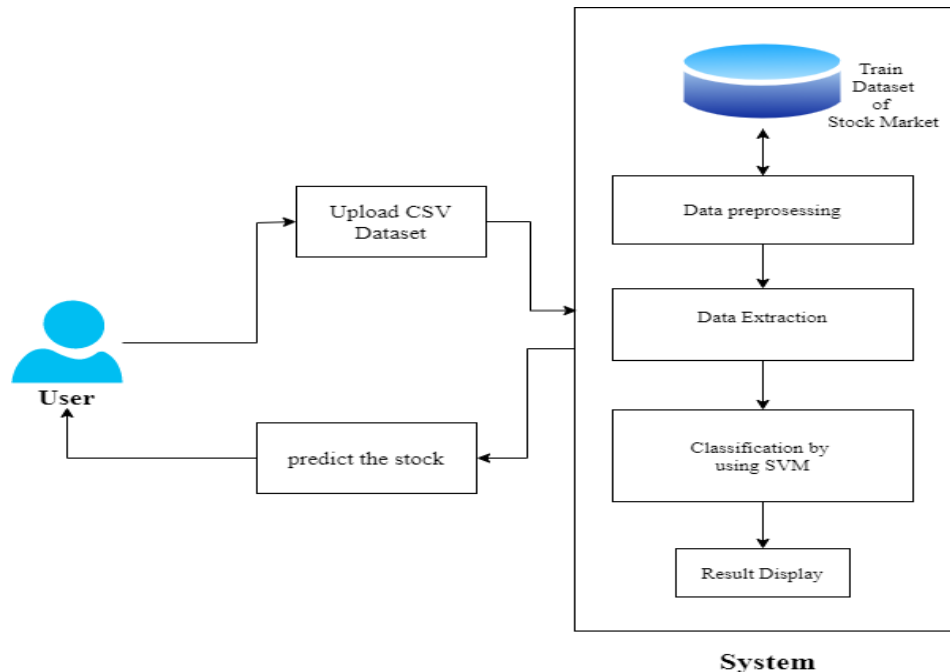
III.   PROPOSED METHODOLOGY

Fig.1 System Architecture

It suggest a scheme for stock market recognition that begins with a csv dataset and an image dataset, followed by pre-processing in which we delete superfluous images, convert NLP to Grey conversion, perform data extraction to validate the image's characteristics, segment the image into subparts, and finally classify with the CNN algorithm. Predict output: Stock market detect.

Upload CSV Dataset:- Here user will take CSV(common   separated values) data set as an input . The dataset will contain high,low,open,close prize of a company.

Data Preprocessing:- Unwanted values values will get removed in data preprocessing .Double data will also be removed here.

Data Extraction :- Its part of Feature Extraction. Here the feature will get selected as per the user requirement.
Classification by using Support Vector Machine (SVM):- Training and Testing of the data is done here. We take 80% of input dataset for training and 20% of dataset for testing.

IV.RESULT

Fig 2. Graphic user interface of login and registration

In Fig. Graphic user interface of login and registration, the graphical user interface is a form of user interface that allows users to interact with electronics devices via visual indicator representation. There are three buttons login, register, exit.

Fig 3. Registration Window

In Fig 3. Registration Window, Registration or login is required everywhere either we r filling form or want to access any application.

In registration window we ask user to enter his/her personal details like email number age etc.
Once user fill his/her personal detail he is registered with required application.
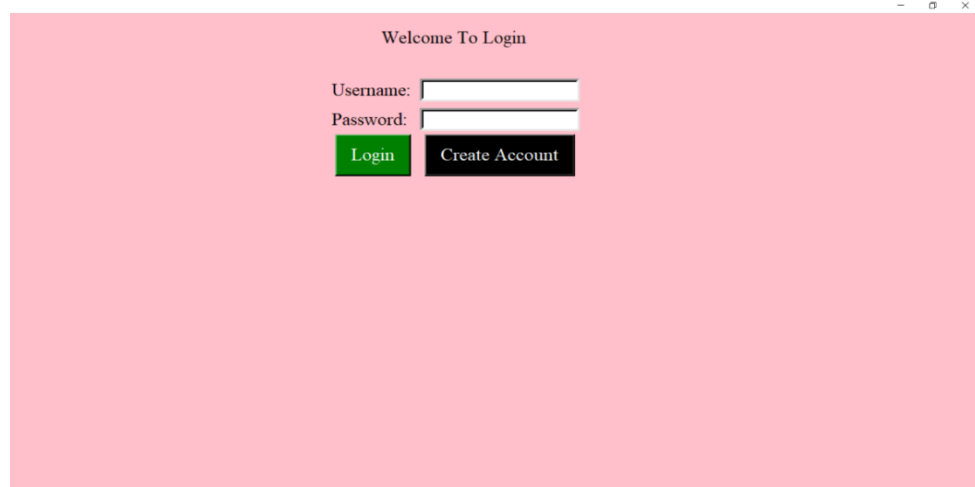

Fig 4. Login Window

In Fig.4 Login Window, And once the user is registered he or she can login again by using his/her
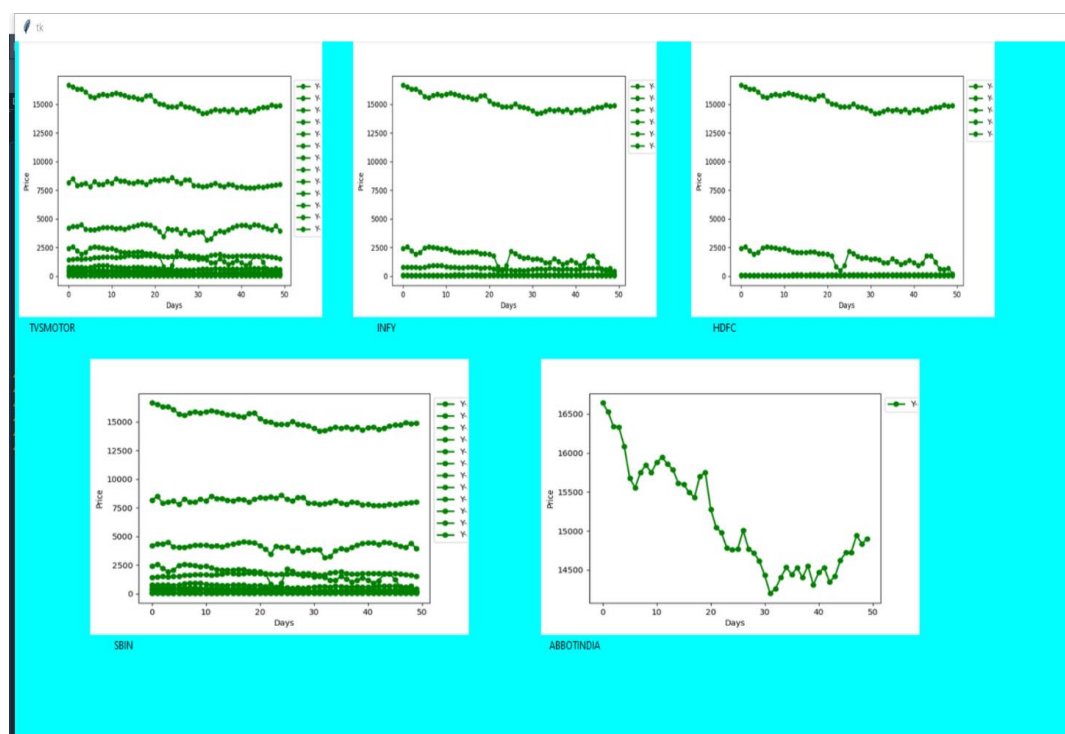email or password so that he or she can access application faster.

Fig5. Prediction of the Stock

In Fig5. Prediction of the Stock, Top5- in top 5 companies we will have our eye on the stats of top 5 companies how they are performing in their past and their current positions in stock market and based on that we Predicts the future value of stock of those companies

V.CONCLUSION

From this system learned how to predict stock market fluctuations using machine learning technology. An person cannot read and comprehend a detailed graph of a company's stock price. In practise, multiple organisations need us to view data on a wide scale. As a consequence, we will use Machine Learning algorithms to make far more intelligent predictions. We're going to use the CNN algorithm. As a result, we will be able to make even more precise estimates.

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