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Stock Market Price Prediction

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***Abstract:** In stock request valuation, the end is to prognosticate the unborn value of the fiscal stocks of a company. Machine learning itself employs different models to make vaccinating easier and more authentic. The paper focuses on the use of retrogression and LSTM-grounded machine literacy to prognosticate stock values. stock request valuation, the end is to prognosticate the unborn value of the fiscal stocks of a company. Machine learning itself employs different models to make vaticination easier and further authentic. The paper focuses on the use of retrogression and LSTM-grounded machine literacv accinatingsticate stock mores.*

I. INTRODUCTION

In this digital era,we can invest in many sources to gain profit in multiple source. One of the popular source is stock market which can giver higher returns on investment compared to other sources. The majority of trading in the Indian stock market takes place on two major platforms (NSE) and (BSE). Since the prices in the stock market are dynamic, stock market prediction is complicated.

A. Time Series Analysis

It refers to the analyze of past trends to predict future analysis. It extends to different areas like industry and business, economics and finance, and environmental science. The definition of TSA can be this way the analysis of some future results by predicting the once-only data. It extends to different areas like business, economics and finance.

The process of selecting can be following way -

1) Long term analysis
2) Medium term analysis
3) Short term analysis

B. Fundamental Analysis

Fundamental analysis refers to process of examining the value of a stock. It helps to predict upcoming trends and up and lows of different companies. Most of the analyst perform evaluation of company and invest on the basis of fundamental analysis. As the technology embarking the pace, most of the fundamental terms are including in brokerage apps to help investors to decide as soon as possible.

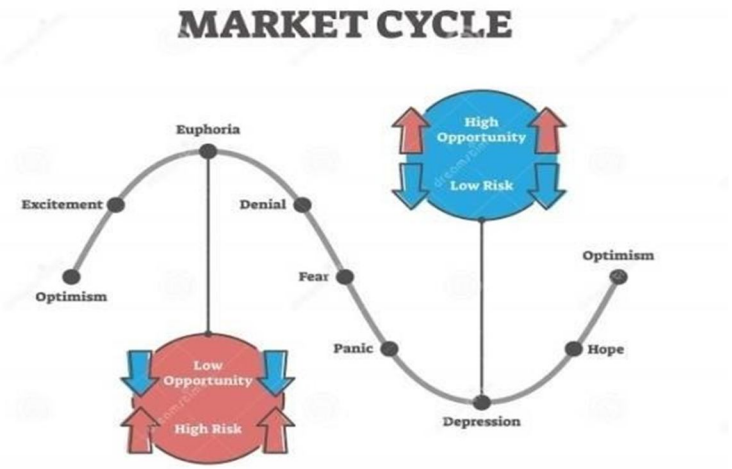


Fig. 1 Illustration of market system

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II. EXISTING WORK

Through using machine learning we are forecasting the values of stock. The machine learning algorithm used are LSTM,Linear regression,Arima. In this proposed system, LSTM is able to catch the variations in the trend of the stock price for the indicated period.

The dataset utilized for analysis was selected from yahoo financing. It consists of approximately 9 lakh records of the required stock price and other relevant data.

By using python we differentiate data in two types which are training data and testing data. We are using data of last two years dataset and allowing the three algorithms which are LSTM,Linear regression, Arima. These algorithms are predicting their value individually. Arima is a algorithm which shows future values of stock prices. It evaluate past trends and time series to predict future stock prices. ARIMA has Three main components AR,I and MA evaluate each part individually and shows future pricw.MA use previous errors in evaluating to make further predictions, I allow that the properties are stationary so that it make most probable value of stock.

III. PROPOSED WORK

Values of open, high, close, low is accumulated, the value of close price is taken from large dataset and it fed as input to the algorithm to analyze and calculate the pattern, After this, the data is divided into two sets, namely training and testing, which have a ratio of 80:20, respectively.

A. Algorithms

1) *LSTM Model:* LSTM allows a neural network to remember to stuff that it require to keep the whole of context,also to forget the stuff that is no longer applicable for example this sequence of letters need to predict what the next letter in the sequence is going to be. Well, just by looking at the letters individually, it's not obvious what the next sequence is, like we have to M's and they both have a different letter following them. If we have gone back through the time series to look at all of the letters in the sequence, we can establish contacts and we can clearly see, And if we, instead of looking at letters, looked at words, we can establish that the whole sentence is a type of recurrent neural network. Recurrent neural net. And recurrent neural networks work in the sense that they have a node, so there's a node here and this node receives some input. The LSTM provides a solution to this long term dependency problem, and that is to add something called an internal state to the RNN node. Now, when an RNN input comes in, it is receiving at least state information as well. So a step receives the output from the previous step, the input of the new step, and also some state information from the LSTM state.
2) *Linear Regression:* The two main objectives of simple linear regression and also we're going to run an example that will help us start understanding how should we interpret the coefficients of a simple linear regression model simple linear regression or regression models in general have two main objectives the first one is going to be to establish if there's a relationship between two variables we're going to be talking about a positive relationship between two variables if they tend to move together in the sense that when one increases the other one increases as well and conversely in a negative relationship we find that if one variables values increase the other variables values tend to decrease more specifically we're going to be talking about statistically significant relationships between the two variables
3) *ARIMA:* Arima stands for auto regression it means that a model that uses the dependent relationship between an observation and some number of lagged observation so in order to predict something we are going to use some historical numbers that is known as auto regression integrated means that the use of differencing of raw materials for example subtracting an observation from an observation at a previous time step in order to make this time series stationary so it means that we will subtract some some like the the previous value with the current value in order to make it stationary because there's a very high possibility that there are some seasonal characteristic of that particular time series in this case we are using bitcoin prices but for example if we were predicting something like sales of a company it is it can be very seasonal so in order to make it stationary we need this integrated model as well and lastly m a in arima means moving average a model that uses dependency between an observation and a residual error from a moving average model applied to net observation i think you would be very much familiar with the moving average basically we take an average of historical prices and we roll it down to make it moving so this is known as moving average and there are there will be some parameters that will be used in this model one of the most important parameter is p it represents the number of lag observations included in the model also known as lag order.

IV. PROPOSED METHODOLOGY

RMSE often referred as root mean square error which is a parameter of measuring accuracy of prediction. RMSE is beneficial for valuating the error and making more accurate of data. this is the formula for rmse f is the forecast that's the expected values or unknown results o is the observed values that is the known results the bar above the square differences is the mean it's similar to x bar there are some other formulas for rmse no matter which you choose it can be a lot of calculation depending on how large your data set is.

It's a time trees method so you only need data on the variable you're trying to forecast and it fits a specific statistical model or equation to that data now the models the equation that a fitted can be of three types a moving average model what a regressive model or a mixture of the two and ultra-aggressive moving average or an armorer model now a lot of aggressive model as the name tells you model was the current value the variable on past values so you can see that here where we've got yt which is the current value is a function of visionary season linear is linearly related to the last period value yt minus one two periods by yt minus 2 and so on as far as p periods back hence a rp model and you need to estimate the coefficients phi 1 to phi p and the constant most of course it's not an exact fit to the data because there'll be some random error some disturbance and so we have that disturbance term t now a moving average model models the current value on a weighted average of past errors so here we have what's called a named a cue model where the current value yt depends upon errors the current error in t 1 p rebar key t minus 1 and so on again a linear relationship so we have to estimate c and the various theta theta 1 to theta q now putting the two together and we have an arima model where as you can see we've got both an autoregressive element and moving average element okay so now here's a very important point that in order to carry out arima modeling the data that you're going to use to estimate has to be stationary now

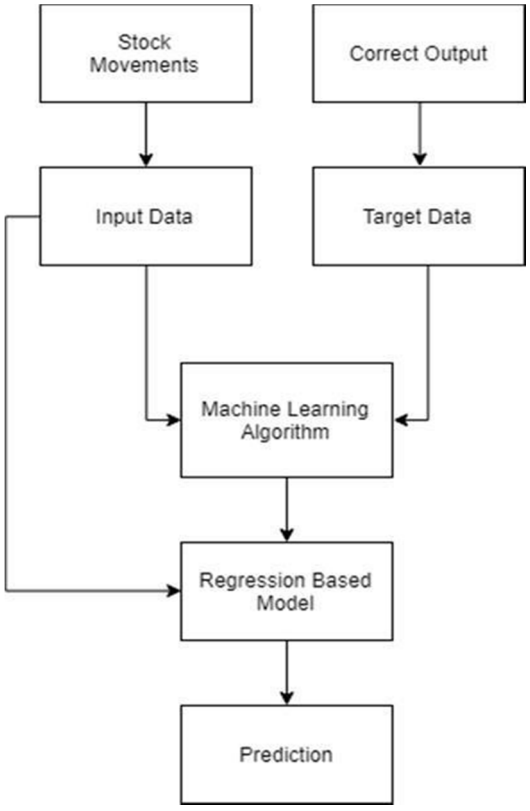


Figure2. Flow Chart for Regression Based Model

V. CONCLUSION

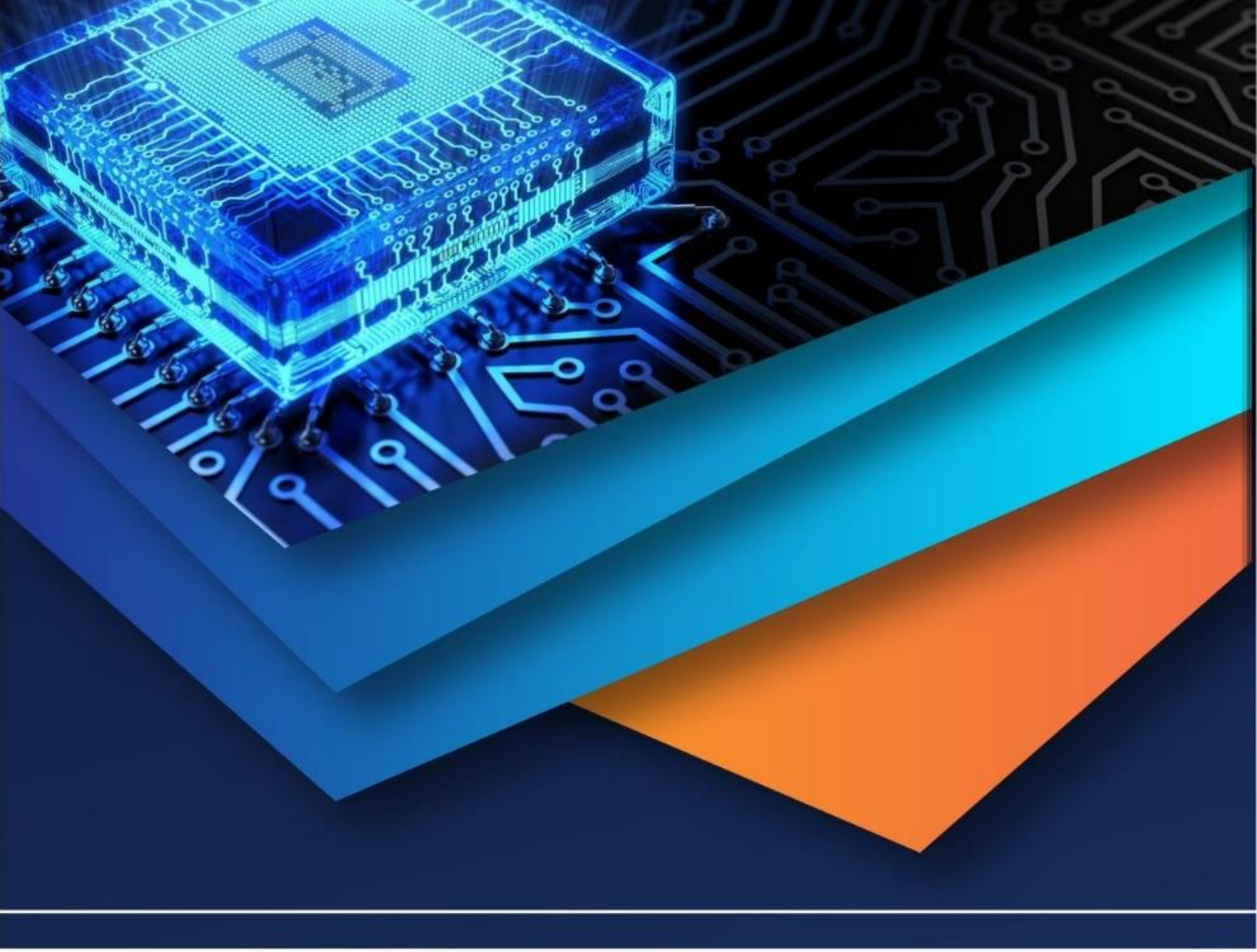
Two techniques have been utilized in this paper: LSTM and regression, on the Yahoo Finance dataset. Both the algorithms which are used has results in the efficiency in predictions, thereby yielding positive results. The use of recently introduced machine learning techniques in the prediction of stocks has yielded promising results, which has led to their use in profitable exchange schemes. It has led conclude that it is chances in valuating the stock market with more accuracy and efficiency using machine learning techniques.

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