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Stock Market Analysis Using Supervised Machine Learning

R. Ashokkumar, Abdul Malik A B, Kabil Sanjay S, Indirakumar S, Vetrivel K.

Head of the Department, Department of Computer Science and Engineering, Mahendra Institute of Engineering and Technology, Namakkal, India

Student, Department of Computer Science and Engineering, Mahendra Institute of Engineering and Technology, Namakkal, India

ABSTRACT: In Stock Market is the financial epitome of financial business and trading since it came into existence it has shown the impact of hits low and similarly when it is high. The stock market crashin2008showed the world that the business hit the low when the Dow Jones Industrial Averagefell777.68%.Several machine learning algorithms have shown that these stock prices can be predicted and these algorithms can be implemented using the approach of supervised learning. In Supervised Learning, we have test data using this we train the models. Although the results obtained after training the model may differ from the actual but it has been observed that in many cases accuracy is satisfactory. In this paper, the first task is to use web scrapping to collect datasets from stock data. Then we plot the data on the graph, from the graph we can analyse the stock prices going high or low. After this, we will predict stock prices using Linear Regression.

I. INTRODUCTION

A correct prediction of stocks can lead to huge profits for the seller and the broker. Frequently, it is brought outthat prediction is chaotic rather than random, which means it can be predicted by carefully analyzing the history of respective stock market. Machine learning is an efficient way to represent such processes. It predicts a market value close to the tangible value, thereby increasing the accuracy. Introduction of machine learning to the area of stock prediction has appealed to many researches because of its efficient and accurate measurementsThe vital part of machine learning is the dataset used. The dataset should be as concrete as possible because a little change in the data can perpetuate massive changes in the outcome.In this project, supervised machine learning is employed on a dataset obtained from Yahoo Finance.

II. RELATED WORK

This dataset comprises of following five variables: open, close, low, high and volume. Open, close, low and high are different bid prices for the stock at separate times with nearly direct names. The volume is the number of shares that passed from one owner to another during the time period. The model is then tested on the test data. Regression and LSTM models are engaged for this conjecture separately. Regression involves minimizing error and LSTM contributes to remembering the data and results for the long run.

III.WHY MACHINE LEARNING

To understand the concept of machine learning better, let's consider some more examples: web search results, real-time ads on web pages and mobile devices, email spam filtering, network intrusion detection, and pattern and image recognition. All these are by-products of applying machine learning to analyze huge volumes of data. Traditionally, data analysis was always being characterized by trial and error, an approach that becomes impossible when data sets are large and heterogeneous. Machine learning comes as the solution to all this chaos by proposing clever alternatives to analyzing huge volumes of data. By developing fast and efficient algorithms and data-driven models for real-time processing of data, machine learning is able to produce accurate results and analysis.

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IV.CLUSTERING ALGORITHM

K-means clustering algorithm – It is the simplest unsupervised learning algorithm that solves clustering problem. K-means algorithm partition n observations into k clusters where each observation belongs to the cluster with the nearest mean serving as a prototype of the cluster.

V.PRINCIPAL COMPONENT ANALYSIS

The main idea of principal component analysis (PCA) is to reduce the dimensionality of a data set consisting of many variables correlated with each other, either heavily or lightly, while retaining the variation present in the dataset, up to the maximum extent. The same is done by transforming the variables to a new set of variables, which are known as the principal components (or simply, the PCs) and are orthogonal, ordered such that the retention of variation present in the original variables decreases as we move down in the order. So, in this way, the 1st principal component retains maximum variati on that was present in the original components. The principal components are the eigenvectors of a covariance matrix, and hence they are orthogonal. Importantly, the dataset on which PCA technique is to be used must be scaledIII. PROPOSED ALGORITHMS. LINEAR REGRESSION

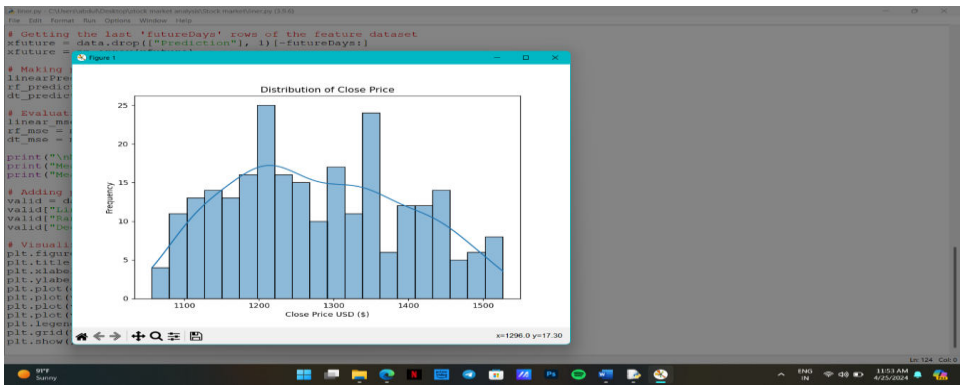
In this project we are using a machine learning algorithm which is Linear regression. Regression predicts a numerical value. Regression performs operations on a dataset where the target values have been defined already. And the result can be extended by adding new information. The relations which regression establishes between predictor and target values can make a pattern. This pattern can be used on other datasets which their target values are not known. Therefore the data needed for regression are 2 part, first section for defining model and the other for testing model. In this section we choose linear regression for our analysis.

VI. TRAINING THE LINEAR REGRESSOR

To get the technicalities out of the way. What I described in the previous section is referred to as Univariate
Linear Regression, because we are trying to map one independent 19 variable (x-value) to one dependent variable (y-value). This is in contrast to Multivariate Linear Regression, where we try to map multiple independent variables (i.e. features) to a dependent variable (i.e. labels). Now, let's get down to business.

Any straight line on a plot follows the formula:
f(X) = M.X + Bf(X) = M.X + B
Where M is the slope of the line, B is the y-intercept that allows vertical movement of the line, and X which is the function's input value.
In terms of Machine Learning, this follows the convention:
h(X) = W0 + W1.X
Linear Regression is the process of finding a line that best fits the data points available on the plot, so that we can use it to predict output values for inputs that are not present in the data set we have, with the belief that those outputs would fall on the line. Performance (and error rates) depends on various factors including the how clean and consistent the data is. There are different ways of improving the performance (i.e. generalizability) of the model. However, each one has its own pros and cons, which makes the choice of methods application-dependent.

VII. RESULT



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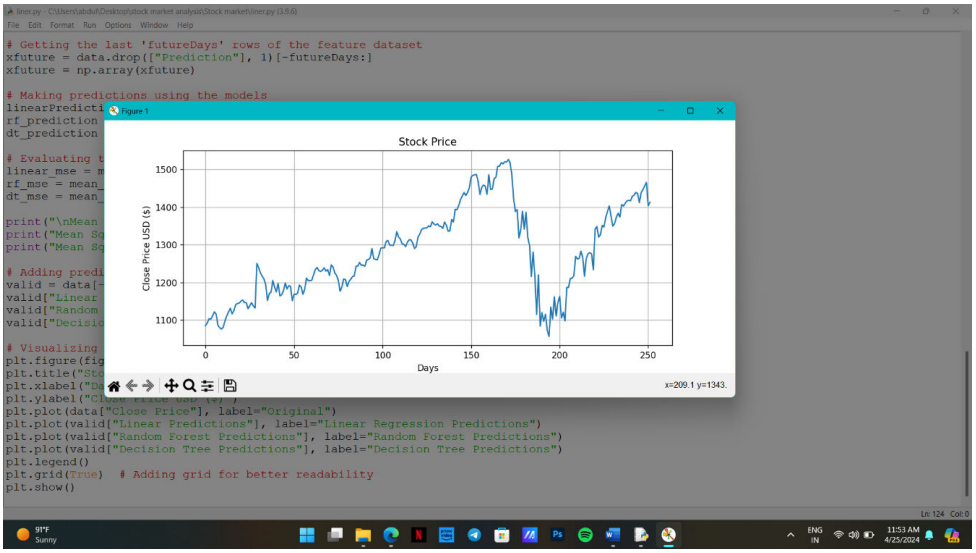

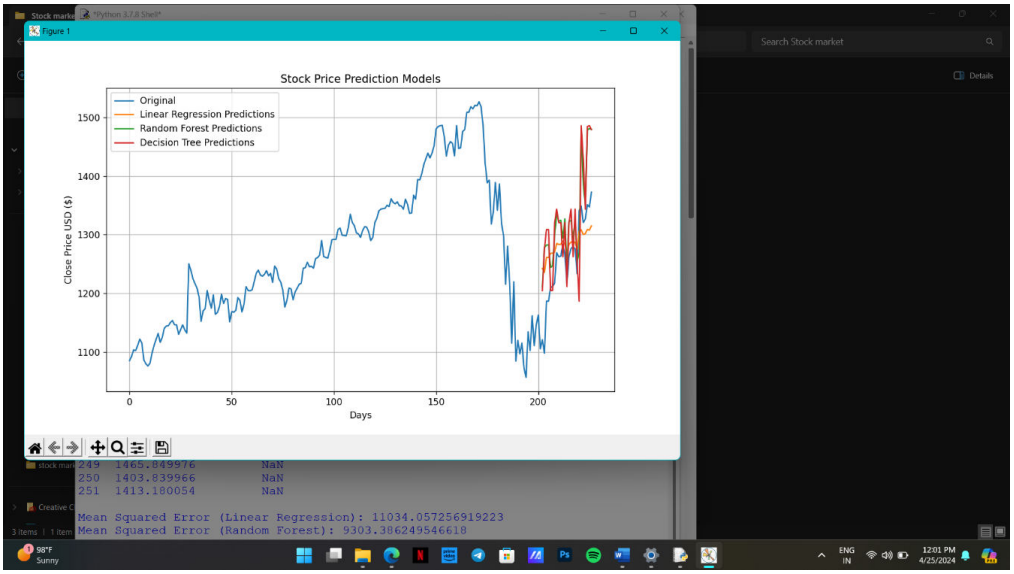

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