



STOCK MARKET PREDICTION PROJECT

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WHAT IS STOCK MARKET ?

The stock market is a place where people can buy and sell ownership in companies. When you buy a share of a company's stock, you own a small piece of that company. The value of the stock can go up or down depending on various factors such as the company's financial performance, market trends, and other events.

Investors buy stocks hoping to make a profit by selling their shares at a higher price than they bought them. The stock market is also an indicator of the overall health of the economy, as it reflects the performance of companies and industries.



WHAT IS STOCK EXCHANGE ?

A stock exchange is a marketplace where stocks and other securities are bought and sold. Companies can issue stocks to raise money from investors, and investors can buy and sell these stocks on the stock exchange.

Stock exchanges provide a platform where buyers and sellers can come together to trade stocks. The exchange acts as an intermediary between buyers and sellers, ensuring that the transactions are completed in a fair and orderly manner.

For more details about stock market, visit :
<https://www.investopedia.com/terms/s/stockmarket.asp>



STOCK MARKET PREDICTION

A stock market prediction project is an application of machine learning or other statistical methods to analyze historical stock market data and predict future trends or prices of a particular stock or the stock market as a whole.

The aim of such a project is to use historical data and other relevant factors to train a predictive model that can be used to forecast future trends, prices, and behavior of the stock market or a particular stock. The prediction can help investors make informed decisions about buying, selling, or holding stocks.



AIM OF MY PROJECT

Predict stock prices of Tesla

SOURCES

- 01** DATASET : <https://www.kaggle.com/datasets/cimmic/tesla-stock>
- 02** MODELS USED : LINEAR REGRESSION, LSTM
- 03** LANGUAGE USED : PYTHON
- 04** IDE USED : JUPYTER NOTEBOOK

ABOUT THE DATASET :

The dataset contains 7 columns :

Date : Contains the date.

Open : The price at which stocks started trading when market opened on a particular day.

Close : It refers to the price of an individual stock when the stock exchange closed the market for a day. It represents the last buy sell order executed between two traders.

High : The highest price at which stock traded for a period.

Low : The lowest price at which stock traded for a period.

Volume : The total amount of trading activity during a period of time.

Adj Close : It contains the calculation adjustment made to the closing price.

RangeIndex: 2193 entries, 0 to 2192			
Data columns (total 7 columns):			
#	Column	Non-Null Count	Dtype
---	---	-----	-----
0	Date	2193 non-null	object
1	Open	2193 non-null	float64
2	High	2193 non-null	float64
3	Low	2193 non-null	float64
4	Close	2193 non-null	float64
5	Adj Close	2193 non-null	float64
6	Volume	2193 non-null	int64

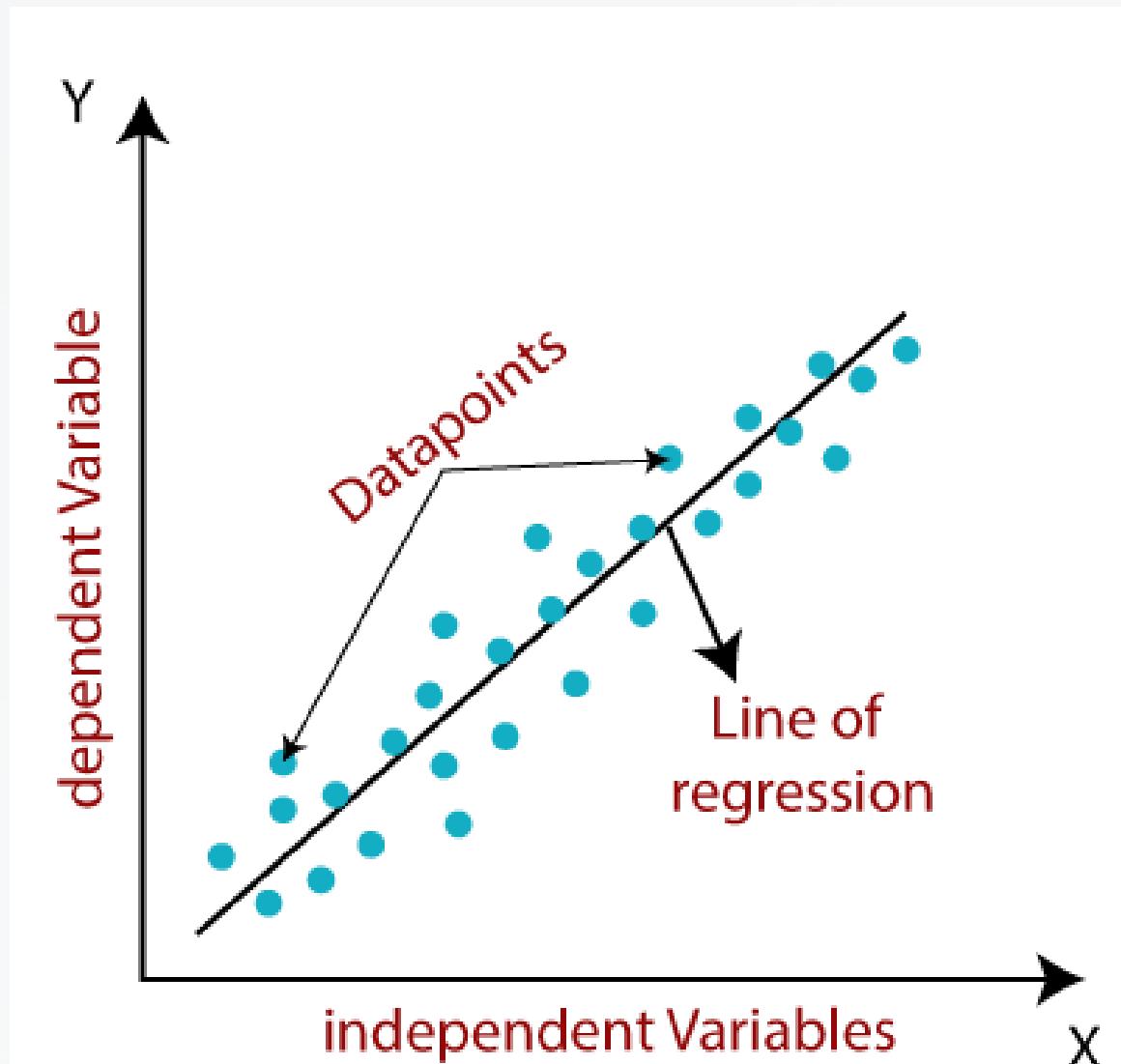
dtypes: float64(5), int64(1), object(1)
memory usage: 120.1+ KB

LINEAR REGRESSION

Linear regression is a statistical method that helps us to understand the relationship between two variables by fitting a straight line through the data. In simpler words, it is a way to find the best-fitting line that represents the relationship between a dependent variable (usually denoted as "y") and one or more independent variables (usually denoted as "x").

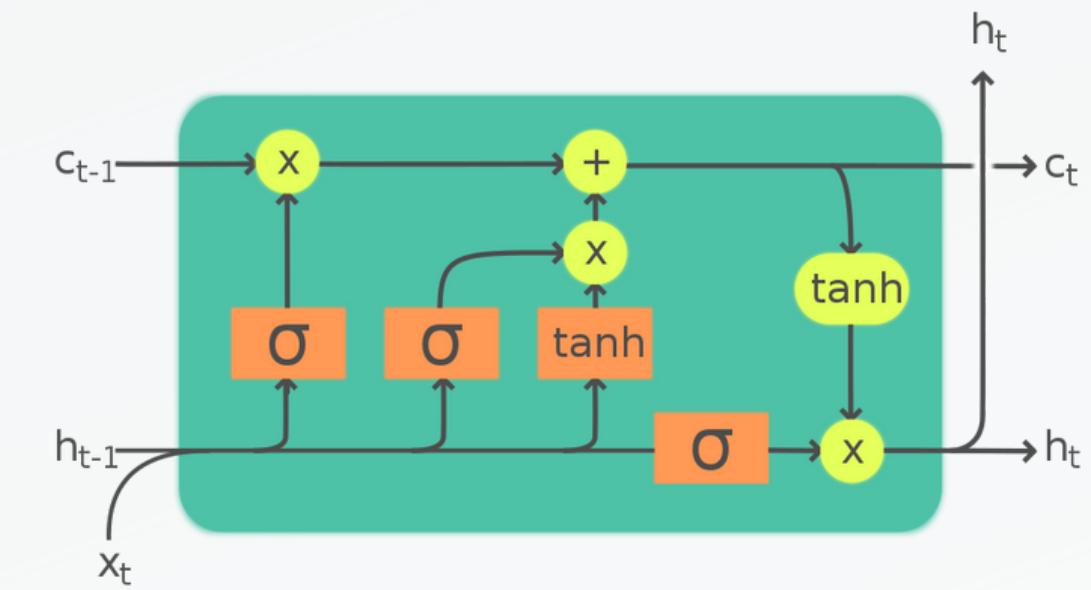
The goal of linear regression is to find the line that minimizes the difference between the actual values of the dependent variable and the predicted values generated by the line. Once we have the best-fitting line, we can use it to predict the value of the dependent variable for a given value of the independent variable(s).

Linear regression is widely used in various fields, such as finance, economics, psychology, and engineering, to identify and analyze relationships between variables and to make predictions based on those relationships.

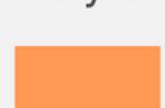


LSTM

Long short-term memory (LSTM) is a type of recurrent neural network (RNN) that is designed to overcome the limitations of traditional RNNs in handling long-term dependencies. The basic idea of LSTM is to maintain a cell state that can be read, written to, and erased, allowing the network to selectively remember or forget previous information. In traditional RNNs, the cell state is overwritten at each time step, which can lead to the problem of vanishing gradients, where the network has difficulty propagating gradients back through time for long sequences. LSTMs address this issue by introducing gates, which are neural network layers that control the flow of information into and out of the cell state.



Legend:



Layer



ComponentwiseCopy



Concatenate

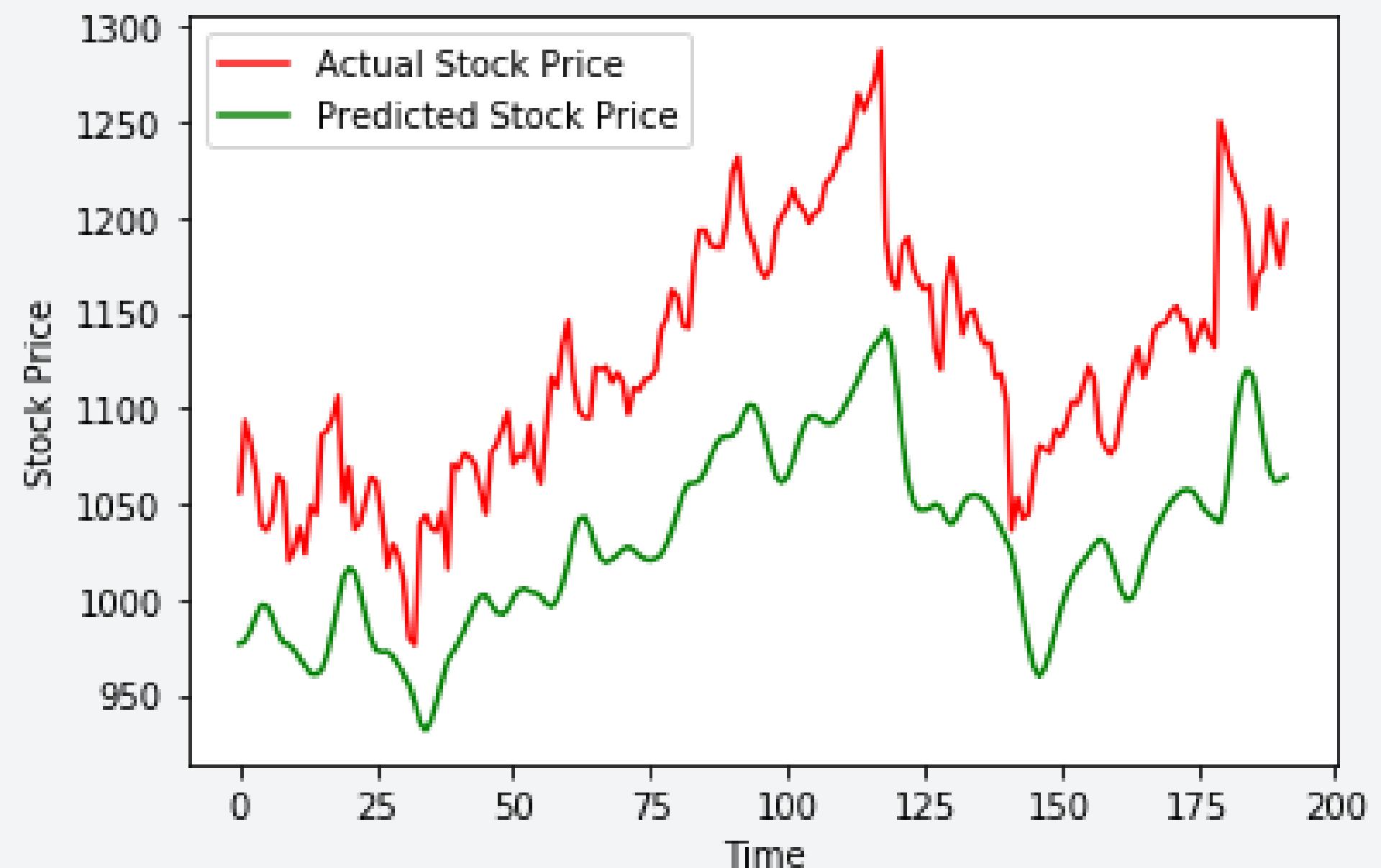


RESULT OBTAINED



Using LR Model

RESULT OBTAINED



Using LSTM Model