

# **Stock Market Prediction**

## **PROJECT SYNOPSIS**

### **Machine Intelligence**

**BACHELOR OF TECHNOLOGY- V Sem CSE**  
**Department of Computer Science & Engineering**

SUBMITTED BY

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## Abstract and Scope :

Stock market prediction is an act of trying to determine the future value of a stock and other financial instrument traded on a financial exchange.

Trained from the available stocks data and gain intelligence and then uses the acquired knowledge for an accurate prediction.

linear regression is popular statistics technique used for solving machine learning problem and supervised learning algorithm for predicting output of the continuous target variable.

Using linear regression algorithm and long short term memory networks we build our prediction model for predicting stock price prediction based on total revenue of company and total unit to be sold of certain product in specific year.

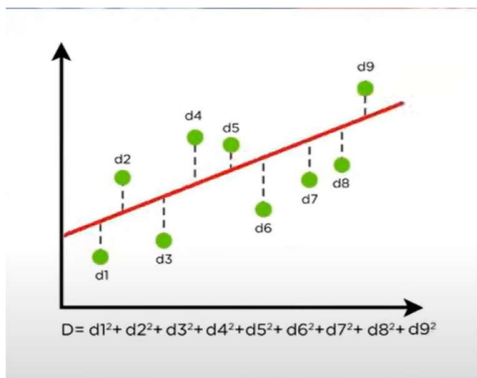


Fig 1

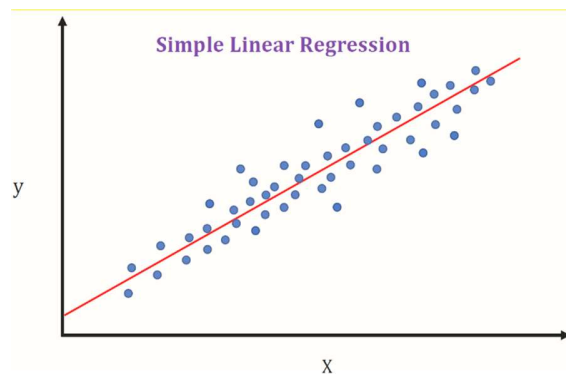


Fig 2

X axis - input variable

Y axis - target variable

Green dots represents actual data points (Fig 1)

In Fig 2 it uses linear equation formula  $y = mx + c$  to plot regression line (red line) best fit line which must have least square distance between original data points and predicted output.

**Tools required** – Jupyter , Numpy , Pandas , matplotlib and ploty library for building chart

### Feasibility Study:

- Stock Market basically helps company to raise capital instead of borrowing the loan for expansion which lead to loss because had to pay with interest. It initializes public offering and raise large amount of cash and leads to increase in personal wealth also
- Raise and fall of prices in shares indicates what cycle the economy is in and its widely used sources for investing money where investor always tend to invest money in company with high growth potential.
- Factor involved in prediction like physical and psychological , rationale and irrational behaviour which are combined to make shares dynamic and volatile.
- This makes it difficult to predict stock market with high accuracy.
- But using machine learning techniques it's easy to predict stock prices of two different companies through chart based on generated linear model.

### Design Approach/ Methodology/ Planning of work :

- First we load company's data onto the csv file.

1	Date	Open	High	Low	Close	Adj Close	Volume
2	29-06-2010	19	25	17.54	23.89	23.89	18766300
3	30-06-2010	25.79	30.42	23.3	23.83	23.83	17187100
4	01-07-2010	25	25.92	20.27	21.96	21.96	8218800
5	02-07-2010	23	23.1	18.71	19.2	19.2	5139800
6	06-07-2010	20	20	15.83	16.11	16.11	6866900
7	07-07-2010	16.4	16.63	14.98	15.8	15.8	6921700
8	08-07-2010	16.14	17.52	15.57	17.46	17.46	7711400
9	09-07-2010	17.58	17.9	16.55	17.4	17.4	4050600
10	12-07-2010	17.95	18.07	17	17.05	17.05	2202500
11	13-07-2010	17.39	18.64	16.9	18.14	18.14	2680100
12	14-07-2010	17.94	20.15	17.76	19.84	19.84	4195200
13	15-07-2010	19.94	21.5	19	19.89	19.89	3739800
14	16-07-2010	20.7	21.3	20.05	20.64	20.64	2621300
15	19-07-2010	21.37	22.25	20.92	21.91	21.91	2486500
16	20-07-2010	21.85	21.85	20.05	20.3	20.3	1825300
17	21-07-2010	20.66	20.9	19.5	20.22	20.22	1252500
18	22-07-2010	20.5	21.25	20.37	21	21	957800
19	23-07-2010	21.19	21.56	21.06	21.29	21.29	653600
20	26-07-2010	21.5	21.5	20.3	20.95	20.95	922200
21	27-07-2010	20.91	21.18	20.26	20.55	20.55	619700

**Open columns** - Means price at which stock started trading when market opened on particular day.

**Close columns** - Refers to price of individual stock when stock exchanged closed market for that day and also represents last buy sell order between two traders

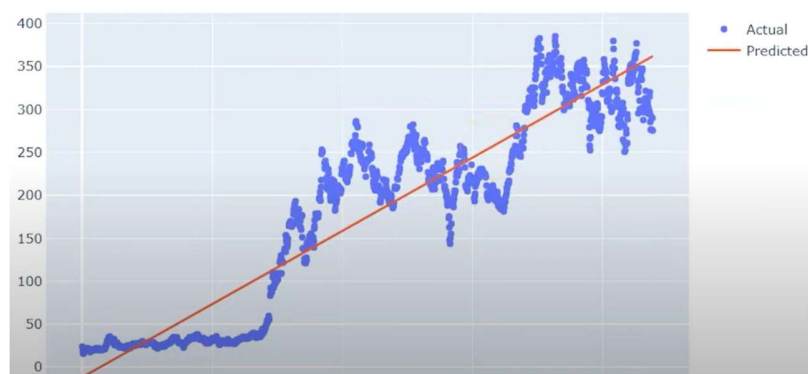
**High columns** - Highest price at which stock traded during period.

**Low columns** - Lowest price at which stock traded during period.

**Volume columns** - total trading activity during period of time.

**Adj close columns** - Calculation adjustment made to stocks closing price its complex but accurate than closing price depicts true price of stock

- We use Jupyter notebook to implement linear regression code by importing pandas , numpy, matplotlib and plotly library for building chart
- Splitting above data into training and testing dataset where X- independent features Y- target variable (close)
- Machine Learning might not perform well if data is not normalized so using function Standard Scaler() which distributes given data normally and create linear regression model.
- Plot actual and predicted values for training dataset to create scatter plot and draw prediction line.



Long Short Term Memory [LSTM] works in three step process :

**Step 1:** Data is omitted using sigmoid function it looks at past and current to compute function.

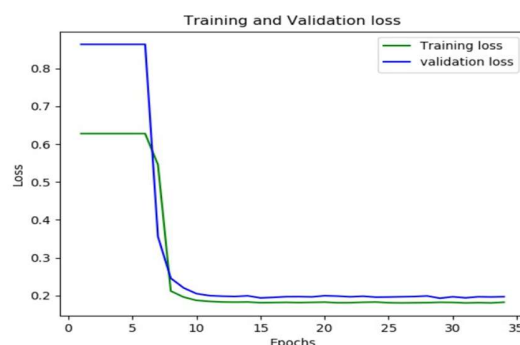
**Step 2:** Two functions:

Sigmoid function – checks which values to let through by 0 or 1

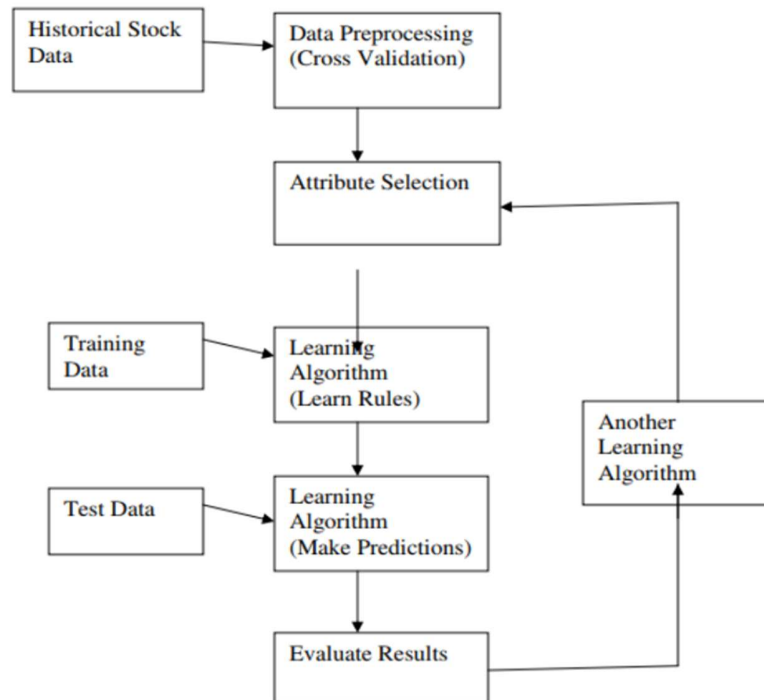
Tanh function - Gives weightage to values depending on there importance  
-1 to +1

**Step 3:** Outputs predicted values.

- It uses ADAM and Mean Square error as error function and it trains model using several epoch and adjusting the batch size. Finally plots graph of epoch vs loss function

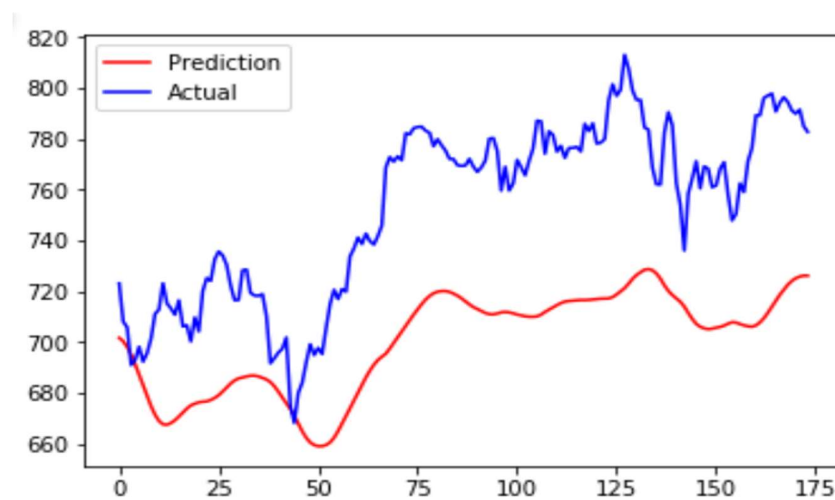


### Work Flow Diagram :



**Fig -3: Learning Environment**

### Final Output :



### References :

[https://www.researchgate.net/publication/328930285\\_Stock\\_Market\\_Prediction\\_Using\\_Machine\\_Learning](https://www.researchgate.net/publication/328930285_Stock_Market_Prediction_Using_Machine_Learning)