**Stock Market Price Prediction:**

**Abstract:**

In Stock Market Prediction, the aim is to predict the future value of the financial stocks of a company. The recent trend in stock market prediction technologies is the use of machine learning which makes predictions based on the values of current stock market indices by training on their previous values.

Machine learning itself employs different models to make prediction easier and authentic. The paper focuses on the use of Regression and LSTM based Machine learning to predict stock values.

**Introduction:**

Financial markets are one of the most fascinating inventions of our time. They have had a significant impact on many areas like business, education, jobs, technology. Over the years, investors and researchers have been interested in developing and testing models of stock price behaviour. However, analysing stock market movements and price behaviours is extremely challenging because of the markets dynamic, nonlinear, and chaotic nature.

**Stock Market:**

A stock market is a public market where you can buy and sell shares for publicly listed companies. The stocks, also known as equities, represent ownership in the company. The stock exchange is the mediator that allows the buying and selling of shares.

**Portfolio:**

A stock market portfolio is an investor’s collection of stocks, funds, and other market-traded securities. A stock portfolio is a collection of stocks that you invest in with the hope of making profit. By putting together a diverse portfolio that spans various sectors you’re able to become a more resilient investor. That’s because if one sector takes hit, the investments you hold in other sectors aren’t necessarily affected.

**Stock Price Prediction:**

A correct prediction of stocks can lead to huge profits for the seller and the broker. Frequently, it is brought out that prediction is chaotic rather than random, which means it can be predicted by carefully analysing the history of the 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.

**Machine Learning Algorithms for predicting the price of stocks:**

**1.Linear Regression:**

Linear Regression analysis is used to predict the value of a variable based on the value of a variable based on the value of another variable. The variable you want to predict is called the dependent variable. The variable you are using to predict the other variable’s value is called the independent variable.

**2.LSTM:**

LSTMs (Long Short-Term Memory Network) are a type of Recurrent Neural Network for learning long-term dependencies. It is commonly used for processing and predicting time-series data. LSTMs have a chain-like structure. General RNNs have a single neural network layer, LSTMs, on other hand have four interacting layers communicating extraordinarily.

A standard LSTM cell comprises three gates: the input, output, and forget gate. These gates learn their weights and determine how much of the current data sample should be remembered and how much of the past learned content should be forgotten. This simple structure is an improvement over the previous and similar RNN model.

Here, you will use a Long Short Term Memory Network (LSTM) for building your model to predict the stock prices of various stocks.

**Importance Of Stock Market:**

* Stock markets help companies to raise capital.
* It helps generate personal wealth.
* Stock markets serve as an indicator of the state of the economy.
* It is a widely used source for people to invest money in companies with high growth potential.
* Higher Liquidity
* Versatility
* Higher returns in shorter period
* Acquire ownership and right to vote

**Aim of the project:**

Stock Market prediction aims to determine the future movement of the stock value of a financial exchange. The accurate prediction of share price movement will lead to more profit investors can make.

**Top Performing Stocks in NSE:**

* Cipla
* Bajaj-Auto
* ITC
* Hindustan Unilever Limited
* JSWSteel
* Britannia

**Factors affecting the stock market:**

* **Supply and demand:**

One of the main factors affecting the share market is the imbalance between supply and demand which leads to the increase or decrease in the price of stocks.

* **Interest rates:**

The governing body, the Reserve Bank of India(RBI), regulates interest rates, directly influencing the price of stocks.

* **Political factors:**

There have been multiple political factors affecting stock markets. For instance, the price of stocks goes down in case of risk of war, weak government, public outrage against the government etc.

* **Natural calamities:**

Natural calamities such as floods, earthquakes, and pandemics such as Yellow Fever, COVID-19 can drastically affect the value of stocks.

* **Inflation:**

Inflation directly affects the finance of people resulting in reduced capacity to invest. Moreover, increased inflation rates discourage people from investing, making companies suffer.

**Pre-processing Techniques:**

* Data Mining
* Data Cleaning

**Steps for Stock market predictions:**

Step 1: This step is important for downloading data from the NSE website. We are predicting the financial market value of any stock. So that the share value up to the closing date are

download from the site.

Step 2: In the next step the data value of any stock that can be converted into the CSV file (Comma Separated Value) so that it will easily load into the algorithm.

Step 3: After selecting the stock dataset file from the folder it will show graph Stock before mapping and stock after mapping.

Step 4: The next step algorithm calculated the logic and logic value for minimizing error. So, it will predict the graph for the dataset value efficiently.

Step 5: In the final step the algorithm displays the predicted value graph of select stock which shows the original value and predicted value of the stock.

**Justification:**

Predicting the stock market was a time-consuming and laborious procedure a few years or even a decade ago. However, with the application of machine learning for stock market forecasts, the procedure has become much simpler. Machine learning not only saves time and resources but also outperforms people in terms of performance. It will always prefer to use a trained computer algorithm since it will advise based only on facts, numbers, and data and will not factor in emotions etc.