PROJECT DOCUMENTATION

Title: **STOCK MARKET PREDICTION**

Mentor:

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PROJECT IDEA:	***Machine learning has significant applications in the stock price prediction. In this machine learning project, we will be talking about predicting the returns on stocks. We will analyse daily stocks status and predict for the next day.***
BACKGROUND:	*As we know that Stock market prices is unpredictable. The prices are never at the same level. Approximate and rough values are generated by using some predictions method hoping for best results, but still it can be unpredictable*
PROJECT DEFINITION:	*Stock market prices always show irregular curve. To find the closest and approximate values from this unpredictable curve is itself a task.*
OBJECTIVE:	*The objective of this project is to forecast the stock prediction based on the given data*
PROJECT OUTCOMES:	*By using the machine learning algorithms we will try to build a model that will predict the approximate stock market prices on the test data.*

MACHINE LEARNING

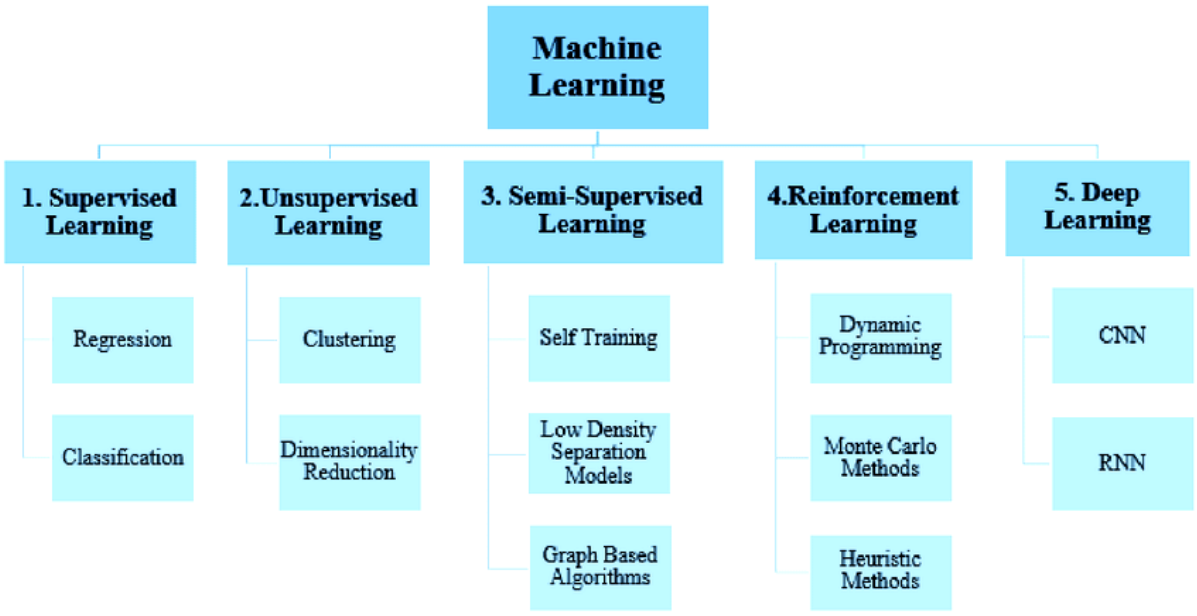
Machine learning is the study of computer algorithms that can improve automatically through experience and by the use of data. It is seen as a part of artificial intelligence.

Machine learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.

Machine learning is an important component of the growing field of data science. Through the use of statistical methods, algorithms are trained to make classifications or predictions, uncovering key insights within data mining projects. These insights subsequently drive decision making within applications and businesses, ideally impacting key growth metrics.

The learning system of a machine learning algorithm into three main parts.

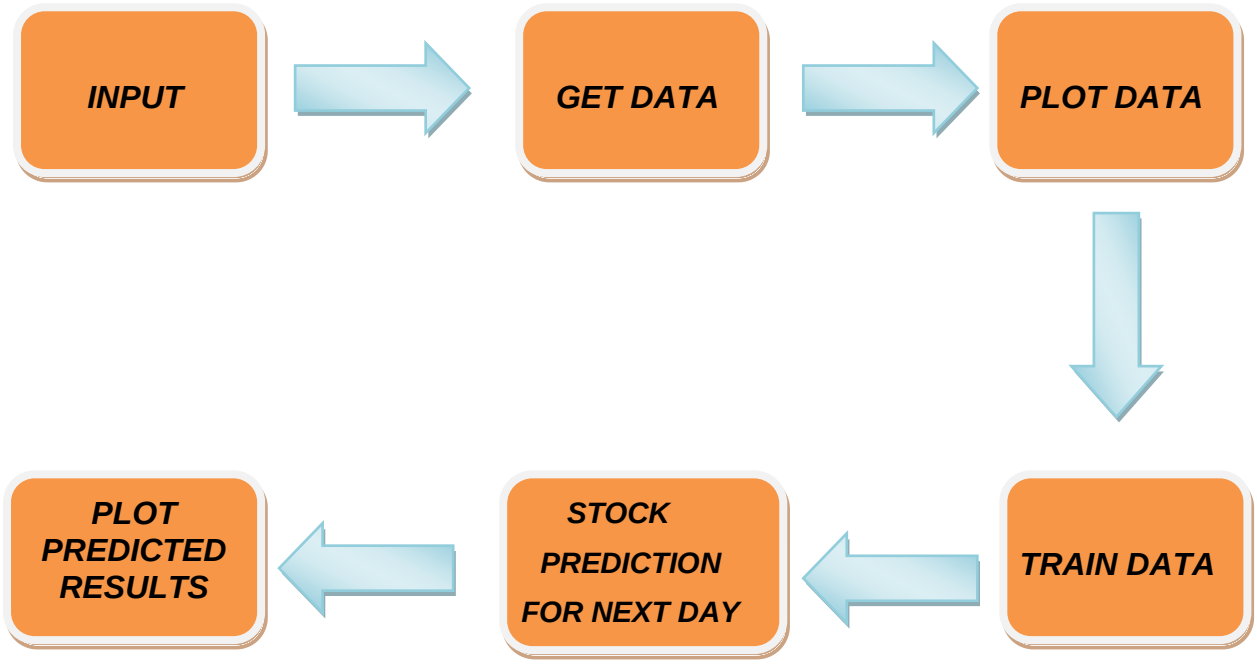
1. **A Decision Process**: In general, machine learning algorithms are used to make a prediction or classification. Based on some input data, which can be labelled or unlabeled, your algorithm will produce an estimate about a pattern in the data.
2. **An Error Function**: An error function serves to evaluate the prediction of the model. If there are known examples, an error function can make a comparison to assess the accuracy of the model.
3. **An Model Optimization Process**: If the model can fit better to the data points in the training set, then weights are adjusted to reduce the discrepancy between the known example and the model estimate. The algorithm will repeat this evaluate and optimize process, updating weights autonomously until a threshold of accuracy has been met.



STEPS IN DESIGNING

1. Data collection.
2. Data preparation
3. EDA
4. Feature engineering
5. Model creation

DATA FLOW DIAGRAM

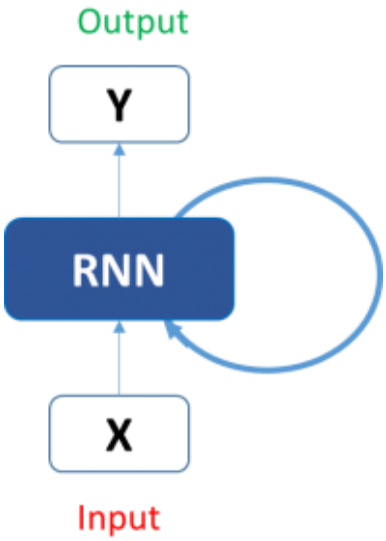


IMPLEMENTATION USING LSTM

Long short-term memory (LSTM) is an artificial recurrent neural network (RNN) architecture used in the field of deep learning. Unlike standard feedforward neural networks, LSTM has feedback connections.

In RNN output from the last step is fed as input in the current step. It tackled the problem of long-term dependencies of RNN in which the RNN cannot predict the word stored in the long-term memory but can give more accurate predictions from the recent information. As the gap length increases RNN does not give an efficient performance. LSTM can by default retain the information for a long period of time. It is used for processing, predicting, and classifying on the basis of time-series data.

A simple machine learning model may learn to predict the stock prices based on a number of features: the volume of the stock, the opening value etc. While the price of the stock depends on these features, it is also largely dependent on the stock values in the previous days. In fact for a trader, these values in the previous days (or the trend) is one major deciding factor for predictions.



Software Description: We have worked on Jupyter Notebook and used libraries like Numpy, Pandas, Sklearn, Matplotlib, etc

CONCLUSION

In this project we have used machine learning algorithms-LSTM, to predict the stock market price for the next day.