

Stock Market Analysis And Prediction Using Python

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Abstract- In Prediction of stock prize is complex and hard task to perform for human abilities, it need complex calculation and also logical understanding of stock market nature and risk factor. Stock market investing strategies are multiple and complex and depends on data or information that you have and this information provides huge possibilities of decision to make

Stock analysis and prediction in financial world always to be unpredictable and even not logical, financial data is hard find relationship between the data should necessarily offers a complex structure due to the which if often makes it hard to find any relation or reliable patterns. For developing or modeling complex structures in python needs machine learning and its algorithms that capable of finding hidden structures within the data and predict how they will affect them in the future. The most efficient methodology to use is Machine Learning

Machine Learning is good example who can copy human behavior and improve performance on some task or set of tasks Machine learning has the strength and facility to ease the whole process by analyzing large dataset, analyzing different particular patterns and create a single output that give row burst idea to traders towards a particular asset decision on prediction. In now days we can download dataset as per our requirement for such model building and training and testing, For example from Kaggle. It is popular place to search for datasets.

Keywords- machine learning, stock market prediction, artificial neural network, algorithm, investment decision, ARIMA Model

I. INTRODUCTION

Investing in Stock market is one of the most rated businesses for making money for middle class traders and investors. After that it is actual trading business of high class investors and traders. Company's share price is most important point for investor which always fluctuates up and downwards.

Eyes always need on live price of share market and instant decision making is necessary to prevent loss of money and eventually to gain money. For this you have to make study of the company's financial history and future agenda.

Dependent on overall study related to market and company you can decide to invest or to take a trade. But you will also have limits to study because one cannot be sure about that study and analysis is correct. Company's market history, tendency of maintaining business in any period or slack, policies and announcements are the key points of Stock Rate. It is difficult field of work and need lot of experience to be a successful investor.

STOCK MARKET

The Stock market concept has come to reality in 16th century and works till now. Where Stock market in simple word we can consider as place where people buy and sell company stock an also trade on Currency, Index, Bonds and Securities, And in India it is regulated by SEBI (Securities and Exchange Board of India) with the help of NSE and BSE

In India we two stock exchanges that are NSE (National Stock Exchange) and BSE (Bombay Stock Exchange). Normally it is also known as share market, Where company, ownership or an organization raise their capital by publishing there part of ownership for sell in stock market and buying and selling or trading in stock market can make good profit or revenue who can trade successfully.

ARIMA MODEL

ARIMA Model stands for (Autoregressive Integrated Moving Average) which can be used with python. Machine Learning is good example who can copy human behavior and improve performance on some task or set of tasks. Machine learning allows us to feed the data to computer algorithm and extract decision based outcomes.

ARIMA (Autoregressive Integrated Moving Average) is one of the best, easiest and effective machine learning algorithms to performing time series forecasting. ARIMA (Autoregressive Integrated Moving Average) is an

python based Machine learning mode that is stands for 'Auto Regressive Integrated Moving Average', is a class of models that shows clear result by giving proof on given time series based dataset from its records or data. It reduces errors in forecasting, so this model can use for time series forecasting, so that mathematical equation can be utilized in order to forecast future values with ARIMA Model (Autoregressive Integrated Moving Average) in Machine Learning

In ARIMA(Autoregressive Integrated Moving Average) mode there is three terms characterizing that are p, q, and d.

Where,

p = The AR term order

q = The MA term order

d = number of differences to make the time series stationary

ARIMA is (p,d,q) are one of the most well known econometrics models that is used to forecast time series data like stock prices, demand prediction, and also the spread of infectious diseases. An ARIMA model is simple ARMA model which is fitted on d^{th} order that is differenced time series in a way that the stationary final differenced time series. A stationary time series is statistical properties that we now as mean, variance, autocorrelation, etc. are all constant over time. A stationary series is relatively simple and easy to predict you simply predict that its statistical properties will be the same in the future as they have been in the past.

Auto regressive Integrated Moving Average (ARIMA) models have many uses in many industries. It is widely used in demand forecasting like stock prediction and many more, such as in determining future demand in food manufacturing. Because the model allows managers with trusted guidelines intaking decisions with respect to supply chains. ARIMA models also helps and used to predict the future trend of your stock based on the previous data.

That is the reason ARIMA (Autoregressive Integrated Moving Average) models are a general class models used to predict and forecast time series data. ARIMA models are generally denoted as (p, d and q) here p is order of autoregressive model, d is degree of differencing, and q is for order of moving-average model. ARIMA(Autoregressive Integrated Moving Average) models use differencing to convert a non-stationary time series data to a stationary data, and forecast from previous or historical data. ARIMA models uses auto correlations and moving averages from residual errors in the data to forecasting.

MODEL BUILDING

Model building of machine learning in Python is more easy as python provides various libraries and simple coding and python give us advantages of it. Python is very simple and easy to code language than other programming language, Python also provides libraries to create simple and beautiful User Interface (UI) for our projects.

Suppose you use an ARIMA(Autoregressive Integrated Moving Average)model to predict a company's stock price. First we need to download the stock prices that are dataset of companies that have been published in the last few years. Once you have this data, you can train an ARIMA model(Autoregressive Integrated Moving Average) on that data by building the model accordingly. Choose the order of differentiation (d) required for this model based on the trend of the data. Then based on the autocorrelation and partial auto correlation, the regression order (p) and the moving average order (q) can be determined. A reasonable model can use maximum likelihood and standard error as performance metrics.

WORKING

Working of Model is quite simple to understand, To understand how an ARIMA model (Autoregressive Integrated Moving Average) functions, there are three terms within the name that you will need to better understand.

In Regression model refers previous time series data as input for regression equation for prediction. And this is how it works.

Auto Regressive – AR (p) is a regression model with lagged values of y, until p^{th} time in the past, as predictors. Here p is the number of lagged observations in the model, ϵ_t is for white noise at time t, c is for a constant and s are parameters.

Integrated I (d) is the difference that is taken d times until the original series becomes stationary. The properties of stationary time series are that it does not depend on the time at when the series is observed.

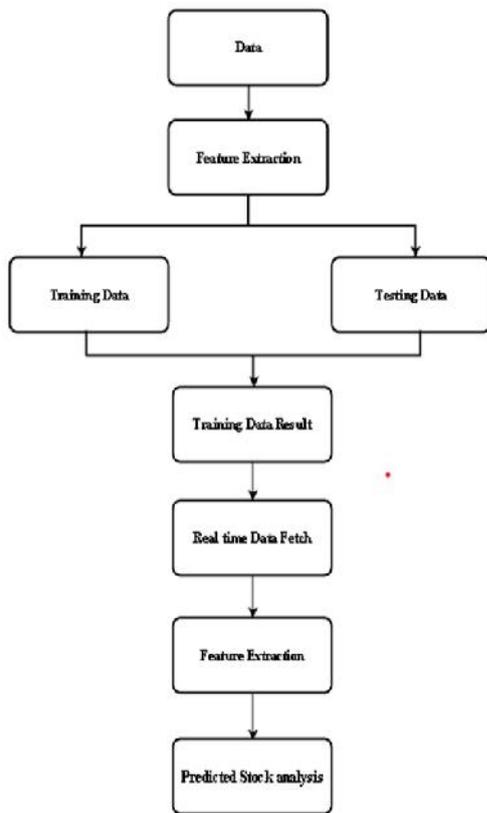
ALGORITHMS

Steps that are used to go thought

1. Collect the data
2. Feature extraction
3. Training data

4. Testing Data
5. Testing result
6. Applying real time data
7. Feature extraction
8. Predicting stock

SYSTEMARCHITECTURE



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III. CONCLUSION

We found here that for stock market prediction machine learning technology we can use. A person cannot read and learn deeply about graph of any company’s stock price. In practical we need to analyze data on vast level with multiple companies. Hence we can take help of Machine Learning algorithms and can have much better prediction. We

can use CNN algorithm. So we can comparatively have more accuracy in prediction

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