

A Thesis/Project/Dissertation Report

on

STOCK PREDICTION

*Submitted in partial fulfillment of the
requirement for the award of the degree of*

Bachelor of Technology



(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

Under The Supervision of

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CANDIDATE'S DECLARATION

I/We hereby certify that the work which is being presented in the thesis/project/dissertation, entitled "**STOCK PREDICTION**" in partial fulfillment of the requirements for the award of the Bachelor degree submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of month, Year to Month and Year, under the supervision of Name... Designation, Department of Computer Science and Engineering/Computer Application and Information and Science, of School of Computing Science and Engineering , Galgotias University, Greater Noida

The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

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This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

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CERTIFICATE

The Final Thesis/Project/ Dissertation Viva-Voce examination of Sushant Singh(19SCSE1010546), Govind Kumar(19SCSE1010158) has been held on Mr. Soumalya Gosh and his/her work is recommended for the award of Bachelor of computer science.

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of

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Signature of Project Coordinator

Signature of Dean

Date: November, 2013

Place: Greater Noida

Acknowledgement

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Abstract

Stock is an unpredictable curve. Prediction in stock market is covered with the complexity and instability. The main aim for the persuasion of the topic is to predict the stability in the future market stocks. Many researchers have performed their research on the movement of future market evolution. Stock consists of fluctuating data which makes data as an integral source of efficiency. Impact on the same chances the efficiency of the prediction. In the recent trend of Stock Market Prediction Technologies machine learning has integrated itself in the picture for deployment and prediction of training sets and data models. Machine Learning employs different predictive models and algorithms to predict and automate things of requirement. The Paper focuses on the use of Regression and LSTM to predict stock values.

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Acronyms

B.Tech.	Bachelor of Technology
M.Tech.	Master of Technology
BCA	Bachelor of Computer Applications
MCA	Master of Computer Applications
B.Sc. (CS)	Bachelor of Science in Computer Science
M.Sc. (CS)	Master of Science in Computer Science
SCSE	School of Computing Science and Engineering

CHAPTER-1

Introduction

We all have heard the word stock one way or the other. Particularly stock is related with the associates and companies which are commercialized and are to settling in the world of marketization. The other word used for stock is share which is prominently used in day to day life. People even term it as an investment plan and it's something people see as a long term investment that secures and provides an abundant funds during the retirement age.

Buying a company stock is purchasing a small share of it. People invest on the same to get a long term benefit which they think is less value for now but has to potential to grow with the time. It's an investment that provides the long time run and deals with long time goals with the fair objectives. The value of share you invest today has to give you an yield of best tomorrow but it's not the same.

Market is unpredictable so are the resources and the factors that are taken to drive it off or on on the set. It's never been on the same level and the pattern of the same is still unpredictable till the time. Some closeness and prediction method had been derived and approximates values and the rough figures are generated hoping for the best but all of the resource can't be trusted and are still unpredictable in nature.

Knowing the market situation and researching on the same is the best way to find the reliability for which there are many agents who have taken the same as a profession and are making a fortune out of it. They predict and advise but the advisory cost and the charge is higher and the stock evaluation is never less the same.

Market is changing in an instantaneous rate even in a day there are many highs and lows in the market and having said the resources and the timing the external and internal agent. Stock is a fascinating resource to start with. representation explaining the security measures and the agreement between two parties which are an individual and the company. Stock is there from the start and due to its

tendency of uncertainty it has been a word of fancy. People researching on the same and implementing on the daily basis had made a fortune out of it. There are various agents available in market for making you understand and invest on the same and the charges of the same are hectic and insanely expensive.

The main resources for the company is the fund to carry out the daily work and create a profit out of it. In time of need for an higher budget estimation and to overgrow from the resources they need the finance and undergoing a finance loan for approval, passing and having one is hectic and the banks are vultures for which the interest rate is higher than the other form of investment hence limiting the margin of the product.

Stock is an other way for company to collect revenue and boost up the production for the upper yield and to gain the most out of the business plan for the bigger pictures. This is found to be an effective way to invest and grow in the commercial field and a better alternative to tackle the financial crisis during the requirement.

For an investor its a risk phenomenon where they invest their saving and hope it brings back the return in higher yield. If the evaluation of the same increases then the stock evaluation and its price increases causing the financial gain to both the parties. In Indian Society it is even consider as a side point business and people believe it as a hand of luck.

When an individual purchases a company stock then they're referred as a shareholder and they will get a share out of the same as they have invested in their profit or the gain. A investor can sell and buy the stock as per their needs. They can share their stock to their respective or the other individuals where as there are many stock brokers available out in the firm playing with the same.

Formulation of Problem

Stock is an unpredictable curve that had been in picture ever since. Its essence had been ever long living and indulging. It had grown its popularity with respect to time. People are more fascinating and interested on the same then before times. Same for the case for the organization. Organization had created it as a better source of revenue generation rather than investing and taking a loan approval from the bank It's way efficient and less hectic from the firm point of view.

Stock is unpredictable and its been the same from the start. Its way of escalating and deescalating had been phenomenon and experiencing the same is the best integral part of it. It has its upper hand and flexibility with the changes that has the chances of uprising as well as crashing the whole market. Its easily defined in few words but making an essence and understanding the same is way more hectic and time consuming.

Simpler it sound complex are its phenomenon and integrating the same. Its has its whole different sets of dependencies and integration from different agents which fluctuate the same in the market. Finding an accurate and getting the exact values out of the same is still unaligned and no particular model of the same is seen in the market value. Stock is an unpredictable curve that had been in picture ever since. Its essence had been ever long living and indulging. It had grown its popularity with respect to time. People are more fascinating and interested on the same then before times. Same for the case for the organization. Organization had created it as a better source of revenue generation rather than investing and taking a loan approval from the bank It's way efficient and less hectic from the firm point of view.

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Tool and Technology Used

Required tools

i. Hardware Requirements :-

Processor RAM Disk Space Pentium II, Pentium III, Pentium IV or higher 64 Mb or Higher
130
Mb.

ii. Software Requirements :-

Operating System Database Win-98, Win-XP, Linux or any other higher version Ms Access.

PROJECT PURPOSE

Stock market prediction is a prediction system software that illuminates the risk that undergoes during the investment in stock market. It predicts the stock rates and its rate of exchange acknowledging the basic understanding and the statistical analysis in front of users.

Data is considered as the digital fuel that gives the possibilities of higher yearn and gives the upcoming terms. Knowledge is power and same holds correct with the stock. Stock is unpredictable and over-changing its dynamic in nature. The rise and fall of the same is uneven and can't be classified so easily. Dependencies of the same deals with flexible resources and the agents behind it.

Investment during a fiscal day determines the opening stock market for the next day. It has its dependencies and is total integration with the level of finances and revenue generation. The stock is tremendous and hectic in nature. The main theme of the project is to predict the turning curves and bring the predictability method and undergo the process and algorithms to conclude to a viable resource source.

Everything flows a pattern. Pattern is the way of derivation and so holds true for the stock too. Stock in day to day life follows a pattern movement. Increase in some resource can increase the price of some whereas decrease the price rate for the others, The source and the outcome are derived on the polarity basis which can either be positive, neutral or an negative flow. Correlation of the given polarity is determined and an effective source and reliability is established.

This project helps in bridging the resources and empowering the people to know and trade the most out of stock and understand the generation and the vulnerabilities that has to be seen and predicted. The enhancement of the same is done with the resource graph which makes an user or the customer to analyses the same and take the needs and important details before dealing and consider those things for the yield that the person is willing to invest on. Forecasting of the stock prediction is done by the available data source and the prediction is done for the upcoming week. The predictability itself is a challenge and that's the main purpose of the report.

MODULES DESCRIPTION

DATA SET

This is the fundamental module before starting of the project. The dataset is a group of data that are mended together to show the data variations in a time span to undergo further estimation and the source of the resources and its outcome for the later time of evaluation. It generates the result optimization and gives a feasible time period to customize and get the flow to the derivation.

This increases and are used in the level of research and finding the best suitable resource out of the same the resources has to be finely estimated and derived for the best possible outcome and the finest the value become the better is the level of extraction and closure is the best yield values that needs to be considered.

DATA ABSTRACTION

Abstraction is the finding of the resource to its best to categorized the above dataset and learning the best out of it. Abstraction of the data is the integral part to the flow. All the data are a huge set of chunks which on processing can limitize the yield result and the computational mean too. Thus with the available resources the data yield had to be derivative.

Abstraction of the dataset is to customize the data set and finding the best suitable constraints to take into consideration and the unwanted resources are the dump which will be dumped and the supreme cluster is created with the valuable constrains and a pattern is needed to be derived from the same.

Data are cleared on this level for the beginning of the process. The valuable data are the set that brings the value to the data set for a better understanding and giving a better yield and production by evaluating the same.

This is a feature abstraction module to extract the featurings of the dataset. This is a feature model process where all the feasible resources are categorized and the same will be in use for the featurings.

TRAINING DATASET

After the abstraction of the data and clustering of the same. The machine had to be trained for which the training data plays the important role. There are thousands of machine learning algorithms that are into place and evolving with the same. The best to the practice of machine learning is to yield the result and the content to derive what's needed with the time frame.

This is a supervised learning form where the input are passed so that the system learns from the same. Various variants of inputs are passed which were stored in the dataset. Every resource is considered and taken into consideration. After considering the whole set of information and the resource the machine tries to learn from the passed dataset. The dataset has to be wide and versatile. After considering the learning it tries to integrate with the same type and flow like the same as the human mind and creates a pattern and the links between the same.

TEST DATASET

These are the sets of data that gives the result after learning from the data. This is the test generation with the output result. Results are generated in each phase of testing. This is also termed as the testing phase. Now a new set of datasets are passed which are deliberately like the training dataset and the efficiency of the same is calculated.

Over-Fitting of the dataset. Validation of the same with the effective constraints and hyper parameters are checked. This phase is training and the output is evaluated with the set of training. After each process of computation the set of data are trained and efficiency of the same is measured and is evaluated with the others.

Various batches of the test is implemented to get to the level of accuracy and derive result to fetch and yield for the best performance and to be true to the effectiveness of the data which is not biased with any constrains available. This determines the efficiency of the system which is must for the predictions.

RESULT EVALUATION

This is the main part for any implementation of the project. Evaluation of the key point to the success. All the categorization of the work and the best to know the resource fundamentals and again establishing the same to check the validity and the work flow and check on the output is must. The evaluation, utilization and implementation undergoes a various level of extraction and evaluation.

The main theme is to provide and come up with the output with an accuracy that can be used and implemented. From the starting to the final the process is categorized, supervised and efficiency is check and the working is undergone. Testing is tested and it's evaluation are mended.

The process undergoes the same for various time and phase. Testing of the same undergoes sequential iteration for many more to meet up to the constituency. The remarks are to be noted and further work is done on the same with the implementation of the different aligned resources that are integrated with the available resources and its outcome.

After the evaluation and customization of the same the result is to be potted in a visible form and the best form of visibility is the graph. The Graph visualization is the best way of visualization that keeps the audience engaged for a long time. Derivation of the outcome is easily accessible and interpreted and the flow diagram is shown with the stock prediction that gives an upper hold to the appearance and shows the best level of the content.

After establishing a graph connectivity the customer or the user takes time to process the data and take that picture into consideration and can avail for the upcoming stock by investing in the same.

Chapter 2

Literature Survey/Project Design

SURVEY – I

Historic data are of great values and that been proved by Sathik and Sekhar[1]. They derived a hidden patterns from the dataset and have out generated a investment decision plan using different data mining technologies. They used the same output to invest on the stocks. The efficiency of the same was found to be 84.26% which was consider to be a higher hit rate.

SURVEY – II

ANN or Artificial neural networks was discovered later Liam and Jing[2]. They used the ANN techniques to classify, predict and recognize the data sets. In neural network the brain phenomenon is studied and the implementation of brain neurons are tried to be practiced. Output generated from the same were used in trading prediction and stability. In the research pages they have mentioned a seven prediction models in neural network for the higher efficiency yield. Sampling. Training and recommending are one of it's features mentioned.

SURVEY – III

Neural Network was found well integrating with Linear Equation and it's relation. Kun Huang and Tiffany [3] used the same to implement a time series fuzzy network model to improvise and predict the forecasting. The efficiency of the model was found to be deliberate but the computational time was higher than the expected causing it slow for prediction.

SURVEY IV

Bajkunthu and Md. Rafiul [4] approached interrelated market forecasting. The approach for the same was initiated with the help of HMM (Hidden Markov Models). HMM is used for classification of the item set in bulk and can be even help in pattern matching, It's a hybrid model implemented for efficiency in forecasting of stock market.

EXISTING SYSTEM

As many have invested their time and effort in this world trade for getting it closer and more reliable to the people for carrying out the resources and make their lifestyle more deliberate than the previous. In the past few years various strategies and the plans had been derived and deployed ever since it's continuation and the topic is still a point of research where people are coming up with ideas to solve.

Intelligence fascinates mankind and having one in machine and integrating on the same is the hot key of research. There are various people contributing on the same research. A Sheta tried its invention on two nonlinear process and had came up with TS which is used as a model for fuzzy sets.

All the learning system from the past are limited and are simplest in nature where learning of the simple algorithm for a computational mean is not enough which can even be done by human brain itself. The main motto of learning was limitized and learning model was not efficient.

The existing models can't cope up with the vulnerabilities and remove the rarest information that they can't process causing it a major data loss which creates a problem in forecasting.

Observation is the integral part in the resource and prediction management. If the outcome can't be observed it's point of time estimation is compromised causing it less liable in market. Monitoring of the same is not possible in the existing system.

The existing system in stock market predictions are apparently biased because it consider a only source point for data source. Before the prediction of the

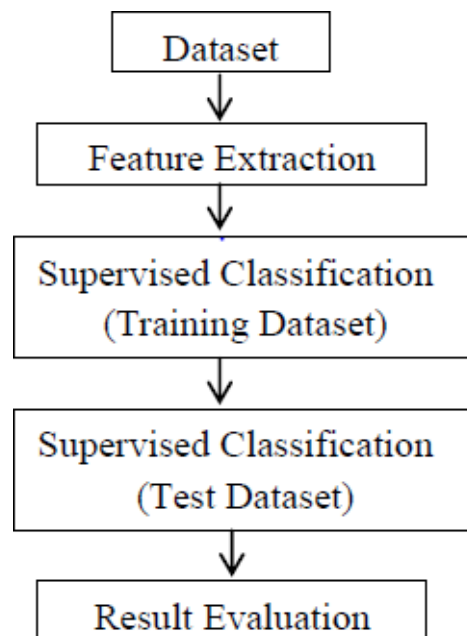
data set a simple data retrieval should be generated and tested on the training data set which are more flexible and versatile in nature.

Loss of sights is a major problem in the existing system as the stock varies each days and the loss margin can be higher with respect to time. An initial instance is taken for prediction.

PROPOSED SYSTEM

Stock is unpredicted and liberal in nature. The follow of the same is impressive and reluctant in nature. Finding the predictability and getting the nearest is the best hit goal for the same. The exact and accurate estimation of the same is never-less possible.

There are various constrains that in-fluctuate the pricing and the rate of stock. Those constrains had to be taken in consideration before jumping to the conclusion and report derivation.



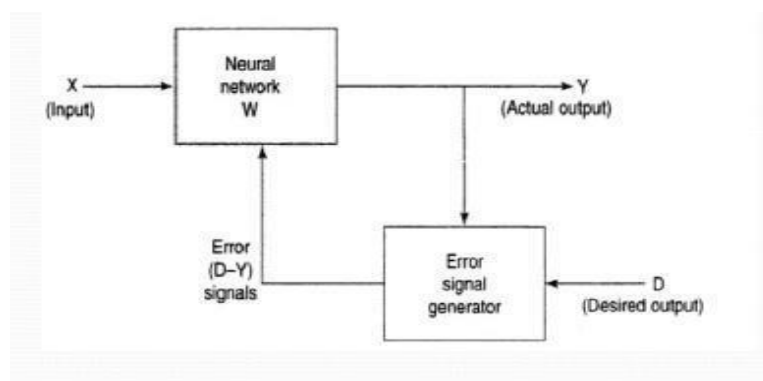
System Flow

Here as described in the figure above, the proposed system will have an input from the dataset which will be extracted featured wise and Classified underneath. The classification technique used is supervised and the various techniques of machine level algorithms are implemented on the same.

Training Dataset are created for training the machine and the test cases are derived and implemented to carry out the visualization and the plotting's. The result generated are passed and visualized in the graphical form.

SUPERVISED LEARNING

Supervised Learning deals with the supervision of the machine to derive the necessary input required. It's a mathematical model where the inputs and output of the same is already known and its passed to the machine to get the expected output so that the efficiency is determined and this is the learning phase for the machine. Here the feeding and derivation of the same is measured. Here the machines filters the inputs learns from the functional unit. Compute it and stores it into its memory for further process and



if found a matching pattern it uses the same and learns from it and plot a result out of the same. his is a dependent process. The machine totally depends on the user who has to feed the inputs and has to check the efficiency of the same and correct it with the flow of iteration. It's an ANN network. During the training phase vectors are taken into consideration.

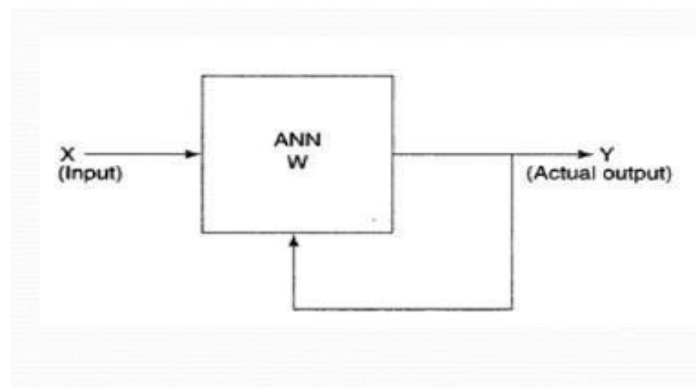
in the above figure There's an input vector and the output vector. The input vector derives and gives an output flow of the output vector. If the error signal is generated then the iteration is undergone where as lacking of the same means the output field is derived and the output result is accurate and no modification needs to be undergone for same.

UNSUPERVISED LEARNING

Unsupervised learning deals with learning by itself. It is also known as self learning algorithm. Here only the input vector is known and passed. So the variance of the result deals with the input factors. Here the input factors are grouped and clustered. Cluster is the main essence of this technique.

Test Data are passed and with the iteration of the same it learns from it derives itself more closer to the conclusion part. Labelled Unsupervised learning deals with learning by itself. It is also

known as self learning algorithm. Here only the input vector is known and passed. So the variance of the result deals with the input factors. Here the input factors are grouped and clustered. Cluster is the main essence of this technique.



Chapter 3

Functionality/Working of Project

Functional requirements deals with the functionality of the software in the engineering view. The component flow and the structural flow of the same is enhanced and described by it.

The functional statement deals with the raw datasets that are categorized and learning from the same dataset. Later the datasets are categorized into clusters and the impairment of the same is checked for the efficiency purpose. After the dataset cleaning the data are cleansed and the machine learns and finds the pattern set for the same it undergoes various iteration and produce output.

NON-FUNCTIONAL REQUIREMENTS

Non functional requirement deals with the external factors which are non-functional in nature It is used for analysis purpose. Under the same the judgment of the operations are carried out for its performance. Stock is feasible and is ever changing so these extra effects and the requirements helps it to get the latest updates and integrate in a one go where the technicians can work on and solve a bug or a draft if any.

The non-functional requirements followed are it's efficiency and hit gain ratio. The usability of the code for the further effectiveness and to implement and look for the security console. The System is reliable and the performance is maintained with the support of integration and portability of the same.

SYSTEM ARCHITECTURE

The dataset we use for the proposed project is been taken from Kaggle. But, this data set is in raw format. The data set is a collection of valuation of stock market information about some companies. The initial step is to convert raw data into processed data. Which is done by feature extraction, since the raw data collected have multiple attributes but only some of those attributes are needed for the prediction. Feature extraction is a reduction process.

The structure, behavior and views of a system is given by structural model.

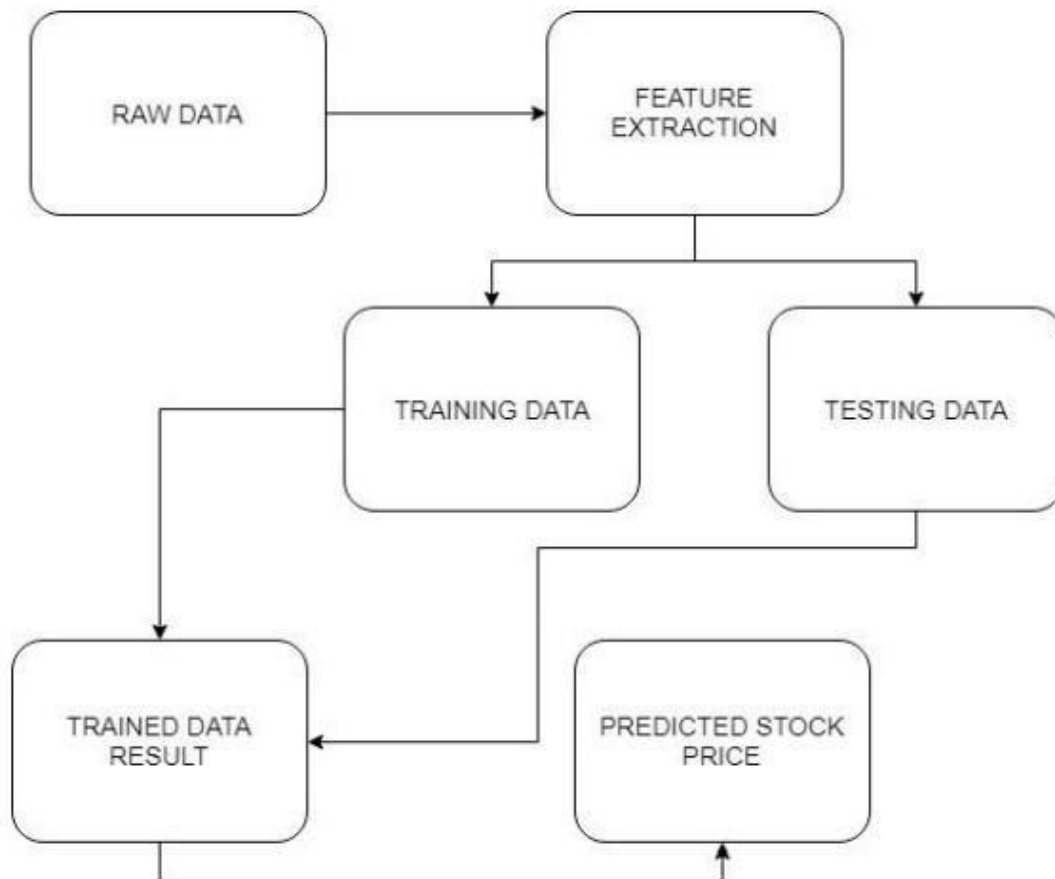


Fig 4.1: System Architecture

The above figure gives the demonstration on the dataset extraction and refining the raw dataset by categorizing into two phase of training and testing data.

Use case Diagram

A dynamic and behavioral diagram in UML is use case diagram. Use cases are basically set of actions, services which are used by system. To visualize the functionality requirement of the system this use case diagram are used. The internal and external events or party that may influence the system are also picturized. Use case diagram specify how the system acts on any action without worrying to know about the details how that functionality is achieved.

For the project we have created the below mentioned use case diagram.

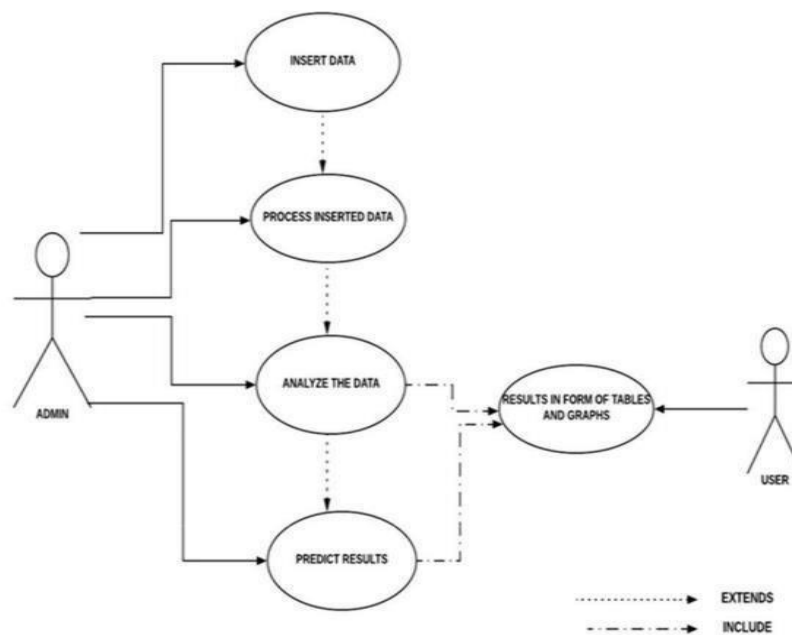


Fig : Use Case Diagram

The above figure shows the use-case diagram of the entitled project and its flow. From the diagram it's seen that the user gives the raw dataset as input and with the flow of the input in the system.

The system evaluates and process the dataset train itself with the provided dataset and extract the meaningful dataset to process and refine the cluster data and from the given cluster of the data, the plotting of the data values are shown and with the given range the system plots the data gives a figurative output as prediction and display the same as the refined output in the display screen.

Data Flow Diagram

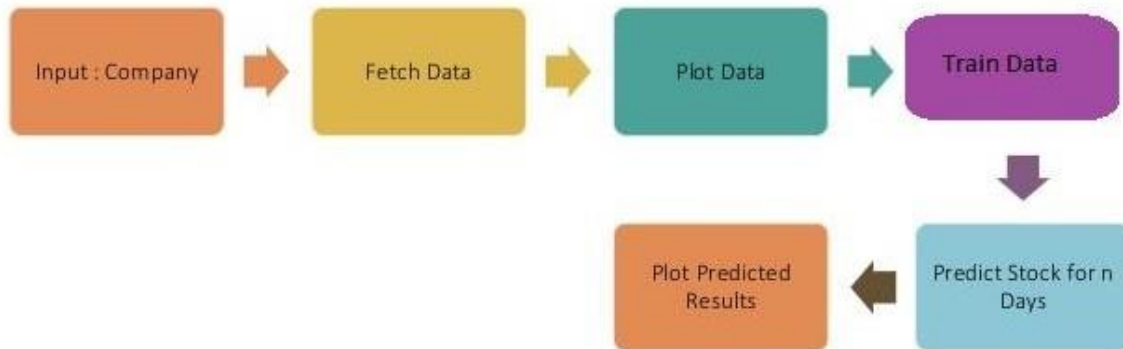


Fig : Data Flow Diagram

In the above fig we are taking a company fetching the data of the company from the panda's data-reader library then we are plotting the data, then we train the data to predict the stock for certain number of days. In this way data is flowing in our system.

Chapter 4

Conclusion and Future Scope

To conclude stock is an unpredictable mechanism which follows the segments of chain and the dependencies of the same are unpredictable. It is defined to be an curve which keeps on changing and turning the price from low to high and vice-versa.

As the integration of the same is higher with other dependencies so leaving one dependencies compromises the level of accuracy. Accuracy is not the term used over in stock as the actual prediction is not possible for any fiscal days it keeps on changing and turning the tables day and night. Having higher component assets and the dependencies makes it more feasible and flexible in nature causing it even harder to predict. The approx value are taken into consideration and the hit or profit or the gain rate is calculated for the same.

In the project various high level machine learning algorithms are implemented and integrated and the output is generated from the same making a user visible with the outputs in the form of graph which makes it easier for them to see and interpret what's the scenario and they can decide on the same to invest and get the benefit out of it,

The proposed software takes the raw set of data from the dataset or the .csv file and process it. The cleaning and cleansing of data is done and then further processed to gain the effective outcomes. After the computational mean the output is displayed in the screen in the form of graph.

Future Scope

Stock Market are the best alternative for business to grow and it's a side way income for the individuals who are ready to invest and earn from the same. The term stock had been in picture ever since and it's growing in bulk everyday. There are thousands of investors investing on the same and making the fortune out of it.

There are middle level agents and stock vendors who learn and invest on the same. The cost for the consultation on the stock is bulky and expensive. So when it comes to people they think a lot and invest and there's no chance and certainty for the same to produce a yieldful result.

So stock being unpredictable and the tendency of its growth is higher than ever. If the stock market and its prediction can be done accurate than it's going to be a gain for both the individuals and the organization. The risk factor have to be mitigated so the efficiency of the system should be high and people can be certain about their investment in time.

The project can be further continued to gain the effectiveness of the prediction with addition implementations of the content that can involve real time scenario and the way of executing and processing the real time scenario. Various constrains has to be added and performance of the same can be acylated in the future time for the effective results. The expected form of the display is graph where as from the same the more appearance and setting of the display can be integrated and a pie-chart and a custom graph can further me implemented on the same.

Chapter 5

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Hagenau, Michael, Michael Liebmann, Markus Hedwig, and Dirk.

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