A

PROJECT REPORT

ON

STOCK MARKET PREDICTION USING MACHINE LEARNING

Submitted in partial fulfillment of the requirements for the award of the Degree of

BACHELOR OF ENGINEERING IN INFORMATION TECHNOLOGY

by

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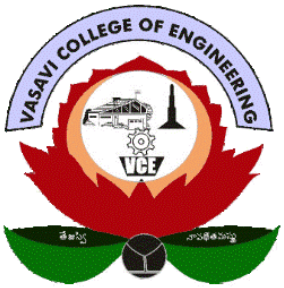

VASAVI COLLEGE OF ENGINEERING

Affiliated to Osmania University and Approved by AICTE

Ibrahimbagh, Hyderabad, TS

2021-2022

DECLARATION BY THE CANDIDATES

We, **L.Shiva Charan, A.Varun Kumar Reddy, D.Neha** bearing hall ticket numbers, **1602-19-737-103, 1602-19-737-121, 1602-19-737-312** hereby declare that the project report entitled "**NSE-Stock Price Prediction**" under the guidance of **KEZIA RANI,HASEEBA YASEEN,MUKESH TRIPATHI** Professor, Department of Information Technology, Vasavi College of Engineering, Hyderabad, is submitted in partial fulfilment of the requirement of MINI PROJECT of V semester of **Bachelor of Engineering in Information Technology**.

This is a record of bonafide work carried out by us and the results embodied in this project report have not been submitted to any other university or institute for the award of any other degree or diploma.

Shiva Charan:1602-19-737-103

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BONAFIDE CERTIFICATE

This is to certify that the project entitled "**NSE-Stock Price Prediction**" being submitted by , **L.Shiva Charan** ,**A.Varun Kumar Reddy, D.Neha** bearing roll numbers **1602-19-737-103, 1602-19-737-121, 1602-19-737-312** in partial fulfilment of the requirements for the completion of MINI PROJECT of Bachelor of Engineering in Information Technology is a record of bonafide work carried out by them under my guidance.

KEZIA RANI

HASSEBA YASEEN

MUKESH TRIPATHI

Dr. K. RAM MOHAN RAO

Professor **HOD, IT**

Internal Guide

ACKNOWLEDGEMENT

A project is never the outcome of a single person's effort. It is a confluence of varied thought processes harmoniously integrated into a resourceful product.

We are immensely grateful to Mrs. Kezia Rani for the constant guidance, support, and sagacious suggestions from the beginning of our training till we complete our project.

We are thankful to Mrs. Haseeba Yaseen for guiding us throughout.

We would also use this opportunity to thank our Head Of Department Dr.K.Ram Mohan Rao. We would also like to thank all faculty members and staff of the Department of Information Technology for their generous help in various ways for the completion of this project.

ABSTRACT

Stock is an unpredictable curve. Prediction in the stock market is covered with complexity and instability. 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 ultimate aim of this is to provide users a user-friendly atmosphere to help the users who are new to investing in stocks and help them out from the very basics as on where to invest, how to invest from where they can earn huge profits, and all. Several stock price prediction approaches and models are developed including simple linear regressions and linear interpolations. This project includes some hands-on ideas of machine learning and web development.

INTRODUCTION

INFORMATION ON STOCK

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 the stock is share which is prominently used the 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 abundant funds during the retirement age.

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

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

Knowing the market situation and researching on the same is the best way to find the reliability for which many agents 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 are higher and the stock evaluation is never less the same.

The market is changing at an instantaneous rate even in a day there are many highs and lows in the market and having said the resources and the timing of the external and internal agent. Stock is a fascinating resource to start with.

PROBLEM DEFINITION

Stock is an unpredictable curve that had been in pictures ever since. Its essence had been ever long-living and indulging. It had grown its popularity concerning time.

People are more fascinated and interested in the same than before times. Same for the case for the organization. Organizations 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 it’s been the same from the start. Its way of escalating, and de-escalating had been a phenomenon, and experiencing the same is the best integral part of it. it has its upper hand and flexibility with the changes that have the chances of the uprising as well as crashing the whole market. Its easily defined in a 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. It 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 pallor model of the same is seen in the market value.

Finding the closest and getting an accurate proximate value out of such unpredictability is a problem in itself. Merging of the data getting the best predictor to increase the efficiency alongside considering the different expects of the moderator it tough and we considered the same and implemented with every aspect to generate the best out of the same and get a result that can be better interrupted and the efficiency remains the same with the value of different aspects of creating an impact, of reducing the risk and influencing the same over the period to gain the most out of it.

This is based on Machine Learning Algorithm to proceed and provide an effective result. Getting the data and processing it and generating a forecast for three days is the problem statement that we worked on.

PROJECT PURPOSE

Stock market prediction is a prediction system software that illuminates the risk that undergoes during the investment in the 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 the same holds correct with the stock. Stock is unpliable and over-changing its dynamic. The rise and fall of the same are uneven and can't be classified. Dependencies of the same deal with flexible resources and the agents behind them.

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. The main theme of the predictability method and undergo the process and algorithms to conclude to a viable resource source. the project is to predict the turning curves and Everything flows in a pattern. The pattern is the way of derivation and so holds for the stock too. Stock day-to-day life follows a pattern movement. An increase in some resources can increase the price of some whereas a decrease in the price rate for the others, The source, and the outcome are derived on a polarity basis which can either be positive, neutral, or a negative flow. Correlation of the given polarity is determined and an effective source and reliability are established.

This project helps in bridging the resources and empowering the people to know what has to be seen and predicted. The enhancement of the same is done with the resource graph which makes a user or the customer analyses the same and takes the needs and important details before dealing and considering 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.

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 plans had been derived and deployed ever since its 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 the machine and integrating on the same is the hotkey of research. Various people are contributing to the same research. Athena tried its invention on two nonlinear processes and had come up with TS which is used as a model for fuzzy sets.

All the learning systems from the past are limited and are simplest where learning of the simple algorithm for a computational mean is not enough which can even be done by the human brain itself. The main motto of learning was limited and the 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 a major data loss which creates a problem in forecasting.

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

The existing system in stock market predictions is biased because it considers the only source point for the data source. Before the prediction of the data set a simple data retrieval should be generated and tested on the training data set which is more flexible and versatile.

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

MACHINE LEARNING

One of the finest words heard in today's time is Machine Learning. Whether it is at work or in different places the machine learning has been an integral part of today's technology. Though its revolutionizing and developing at a rapid rate and development and deployment of the same is still in progress. Machine learning itself had brought random changes in today's world because of which automation is in a frame that was a mere existence in the past. It's an aspiring term in today's time. One of the moves that all the firms are interested in. It's a leading pillar for tomorrow leading the world to a better future of evolution where the customization and labor work can be reduced to half and the safety of the survival can be held to stand tall for the better utilization of the human mind.

Keeping that in the picture it's been a hazard to many more in terms of irrespective field of interest. Since the Machine is considered the most efficient and the level of mistakes are kept at the minimum the level of workflow can be a work of hazard and further improvement on the same may create thousands sitting idle in-home creating a larger impact on unemployment and livelihood. Which is another way is a threat to society too?

ML is the abbreviation for Machine Learning. In other words, it is making a human mind fitting inside a machine that uses the same to perform the task of thousands.

Machine Learning deals with the higher aspects of learning techniques and algorithms which are highly aligned to make the workflow seamlessly effortless with the human tendency of doing work.

Algorithms of such are improvising in nature which learns by themselves and ft themselves in the world of impairment by getting the required data and adjusting with the same giving the effective results out of the same. ML is a subsidiary or the subset of Artificial Intelligence. It is a mathematical model where the computation of the test cases plays a major role in driving the results.

A wide level of machine learning architecture is implemented today to turn on the yield factor and make people's life more efficient in terms of livelihood. Various use of such in Message Filtering like spam, Trash automation is automated and carried out by the same. Since efficiency is way more than a

human tendency. Multi-tasking and processing are also initiated by the same giving a dual output that a human can never possibly be able to.

Statistics is a major key role in driving machine learning in the figure. it deals with computation of statistics in a wide range view and processing the same to give a data-driven output causing it more sensible and resources able. Not only do the same it optimizes the resources and the efficiency is unbitable and reliable in terms of any means.

Though it’s being evolutional it has integrated itself well with the terms of computational and digitalization. Various computational fields like Data Mining,

Statistical Analysis, Optimization of resources, Automation are a major part of it. Here the machine can process the result on its own as same as the human bring. This process can be the initiator as well as the derivable.

REQUIREMENT ANALYSIS

FUNCTIONAL REQUIREMENTS

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

The functional statement deals with the raw datasets that are categorized and learned 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 produces output.

NON-FUNCTIONAL REQUIREMENTS

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

The non-functional requirements followed are its 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.

Operating System: Windows

Front End(using HTML, CSS and JavaScript): Text Editor, Web Browser

Back End: SQLite3(Flask framework)

Jupyter Notebook/Spyder and datasets for machine learning.

Programming Language: Python

DESIGN GOALS

To make the project run smoothly I'm required that we make a plan and design some accepts like flowcharts and system architecture which are defined below.

Data Collection

Data collection is one of the important and basic things in our project. The right dataset must be provided to get robust results. Our data mainly consists of the previous year (or weeks stock prices. We will be taking and analyzing data from Kaggle. After that seeing the accuracy, we will use the data in our model.

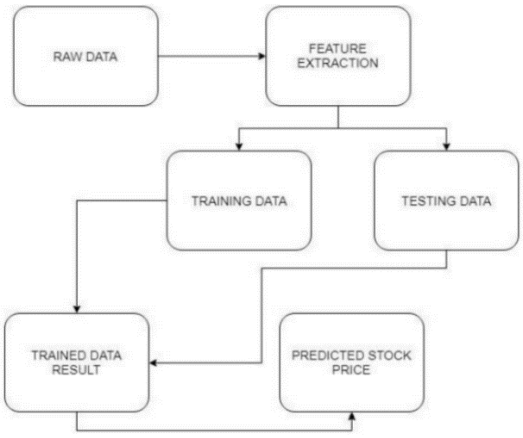
Data Pre-processing

A human can understand any type of data but the machine can't our mode! Wall learns from scratch so it's better to make the data more machine-readable. Raw data is usually inconsistent or incomplete Data pre-processing involves checking missing valves, splitting the dataset, and training the machine, etc.

Training Model

Similar to feeding some things, machines/models should also learn by feeding and learning on data. The dataset extracted from Kaggle will be used to train the model. The raining model uses 2 raw sets of data as the undefined dataset which is collected from the previous fiscal year and from the same dataset a refine view is presented which is seen as the desired output. For the refining of the dataset, various algorithms are implemented to show the desired output.

System Architecture



UML DIAGRAM

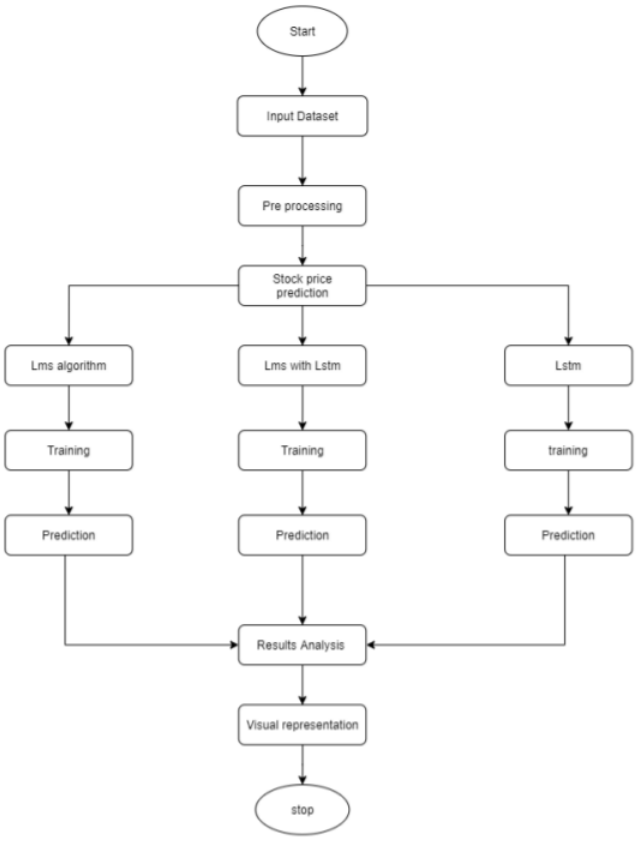
A UML diagram is a partial graphical representation (view) of a model of a system under design, implementation, or already in existence. UML diagram contains graphical elements (symbols) - UML nodes connected with edges (also known as paths or flows) - that represent elements in the UML model of the designed system. The UML model of the system might also contain other documentation such as use cases written as templated texts.

The kind of diagram is defined by the primary graphical symbols shown on the diagram. For example, a diagram where the primary symbols in the contents area are classes is a class diagram. A diagram that shows use cases and actors is a use case diagram. A sequence diagram shows the sequence of message exchanges between lifelines.

UML specification does not preclude mixing of different kinds of diagrams, e.g., to combine structural and behavioral elements to show a state machine nested inside a use case. Consequently, the boundaries between the various kinds of diagrams are not strictly enforced. At the same time, some UML Tools do restrict the set of available graphical elements which could be used when working on a specific type of diagram.

FLOWCHART

A flowchart is a type of diagram that represents a workflow or process. A flowchart can also be defined as a diagrammatic representation of an algorithm, a step-by-step approach to solving a task. The flowchart shows the steps as boxes of various kinds, and their order by connecting the boxes with arrows.


Start
Input Dataset
Pre processing
Stock price prediction
Lms algorithm
Lms with Lstm
Lstm
Training
Training
training
Prediction
Prediction
Prediction
Results Analysis
Visual representation
stop

Sequence Diagram

A sequence diagram is a type of interaction diagram because it

describes how and in what order a group of objects works together. These diagrams are

used by software developers and business professionals to understand requirements for a

new system or to document an existing process. Sequence diagrams are sometimes known

as event diagrams or event scenarios.

Sequence diagrams can be useful references for businesses and other

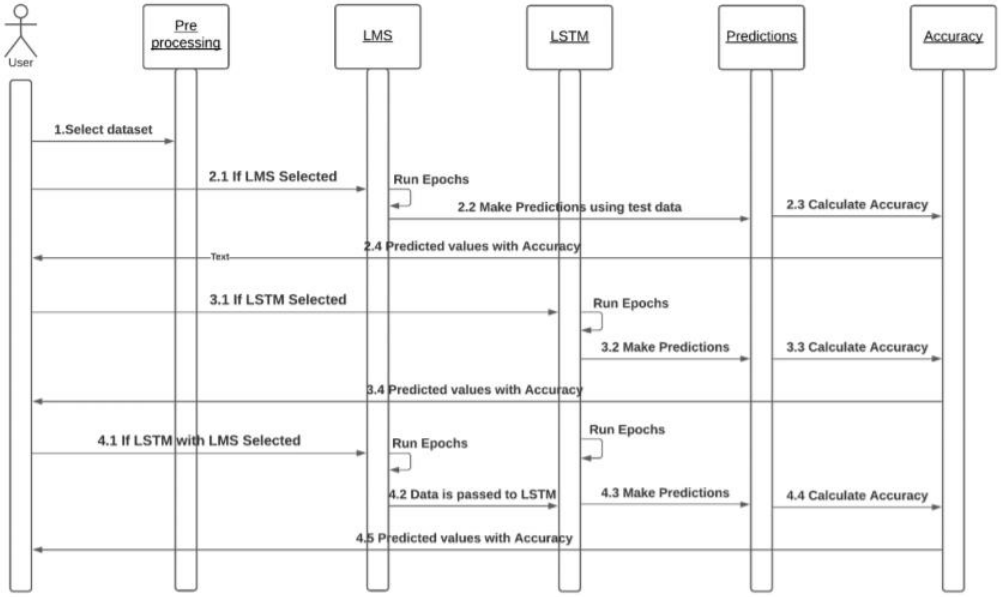
organizations. Try drawing a sequence diagram to:

• Represent the details of a UML use case.

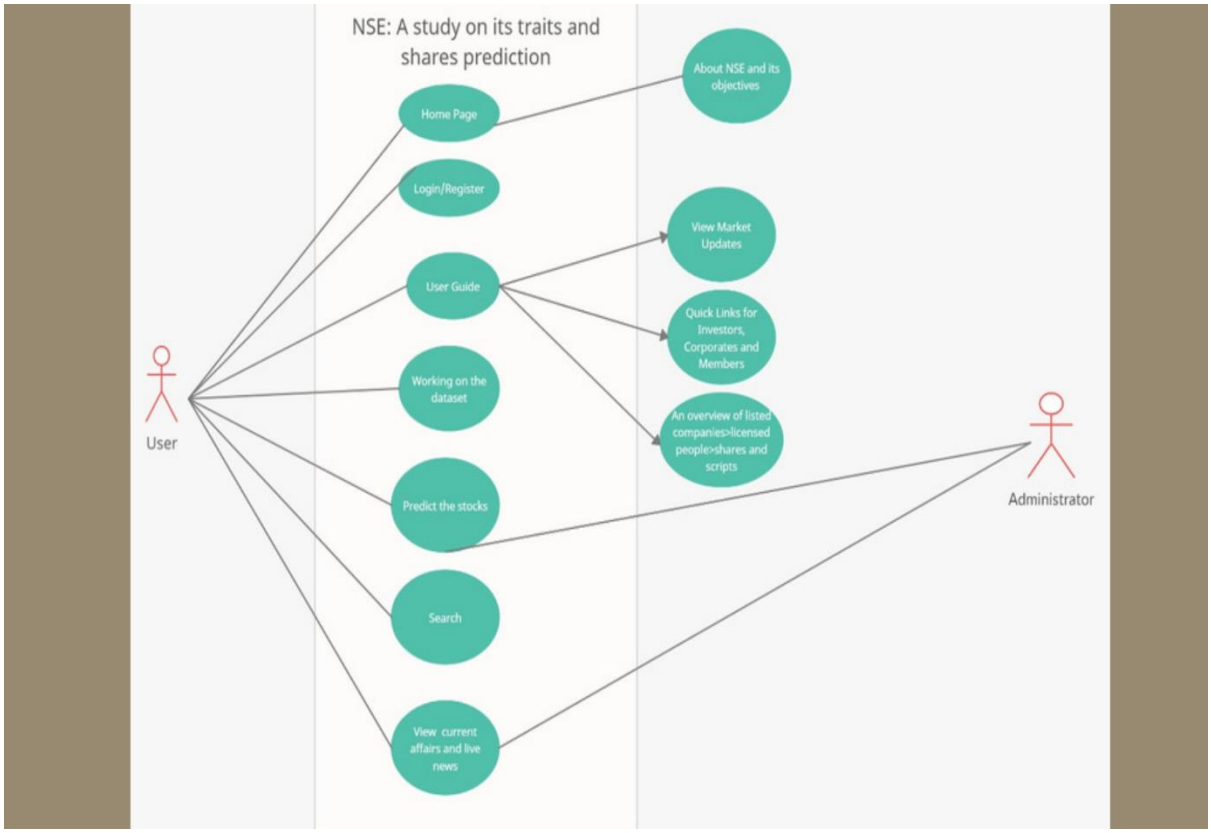
• Model the logic of a sophisticated procedure, function, or operation.

• See how objects and components interact with each other to complete a process.

• Plan and understand the detailed functionality of an existing or future scenario.


User
Pre processing
LMS
LSTM
Predictions
Accuracy
1.Select dataset
2.1 If LMS Selected
Run Epochs
2.2 Make Predictions using test data
2.3 Calculate Accuracy
2.4 Predicted values with Accuracy
Text
3.1 If LSTM Selected
Run Epochs
3.2 Make Predictions
3.3 Calculate Accuracy
3.4 Predicted values with Accuracy
Run Epochs
4.1 If LSTM with LMS Selected
Run Epochs
4.2 Data is passed to LSTM
4.3 Make Predictions
4.4 Calculate Accuracy
4.5 Predicted values with Accuracy

USE CASE DIAGRAM

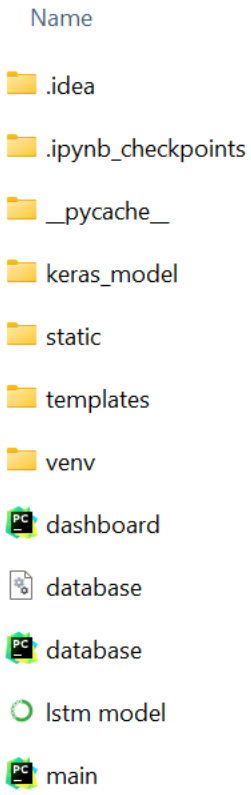


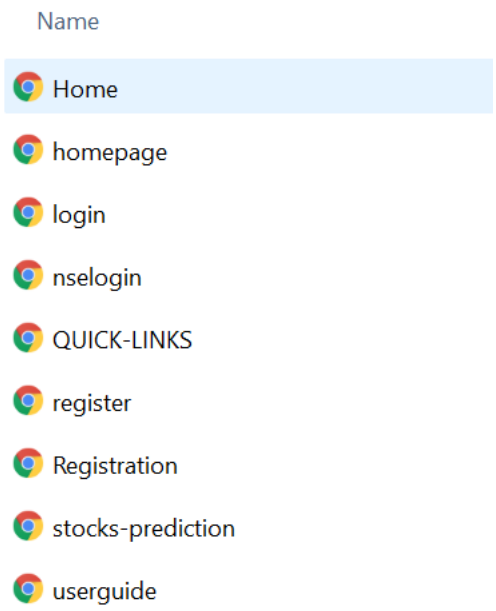
STOCK PREDICTION CODE:

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import pandas_datareader as data
from keras.models import load_model
import streamlit as st
class Stocks:
    def __init__(self):
        start='2013-01-01'
        end='2021-12-22'
        st.title("STOCK PRICE PREDICTION")

        user_input=st.text_input('Enter Stock Ticker(symbol assigned to
stock):','AAPL')
        df=data.DataReader(user_input,'yahoo',start,end)

        st.write(df.describe())

        st.subheader('Closing price vs Year')
        fig=plt.figure(figsize=(12,6))
        plt.plot(df.Close)
        st.pyplot(fig)

        st.subheader('Closing price vs Year with 100MA and 200MA')
        ma100=df.Close.rolling(100).mean()
        ma200=df.Close.rolling(200).mean()
        fig=plt.figure(figsize=(12,6))
        plt.plot(ma100,'g')
        plt.plot(ma200,'r')
        plt.plot(df.Close,'b')
        st.pyplot(fig)


        data_training=pd.DataFrame(df['Close'][0:int(len(df)*0.70)])

data_testing=pd.DataFrame(df['Close'][int(len(df)*0.70):int(len(df))])
        from sklearn.preprocessing import MinMaxScaler
        scaler=MinMaxScaler(feature_range=(0,1))
        data_training_array=scaler.fit_transform(data_training)


        model=load_model('keras_model')

        past_100_days=data_training.tail(100)
        final_df=past_100_days.append(data_testing,ignore_index=True)
        input_data=scaler.fit_transform(final_df)
        x_test=[]
        y_test=[]
        for i in range(100,input_data.shape[0]):
            x_test.append(input_data[i-100:i])
            y_test.append(input_data[i,0])
        x_test,y_test=np.array(x_test),np.array(y_test)
        y_predicted=model.predict(x_test)
        scaler=scaler.scale_
        scale_factor=1/scaler[0]
        y_predicted=y_predicted*scale_factor
        y_test=y_test*scale_factor
```

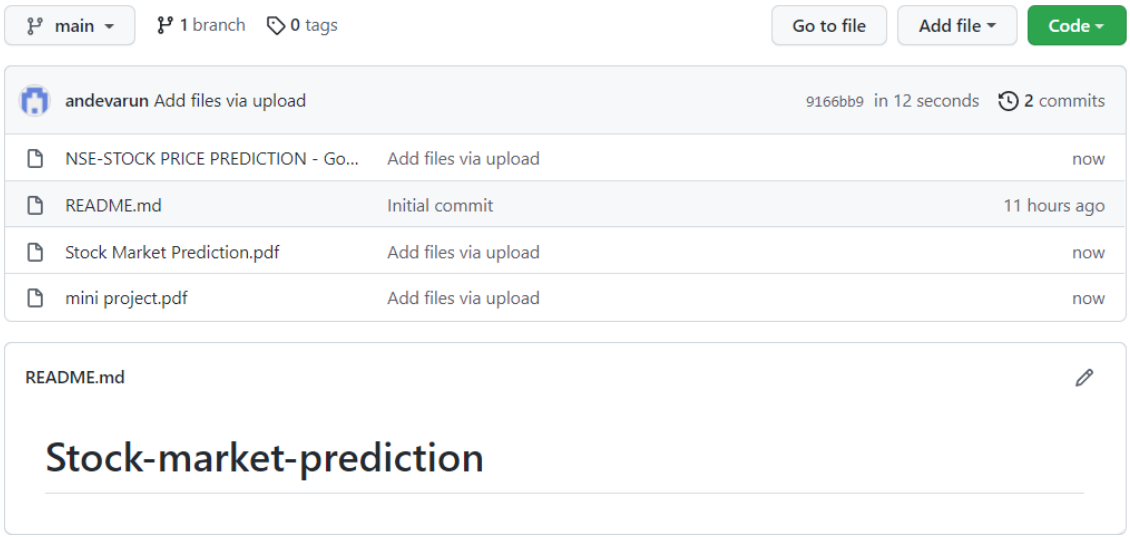
```
st.subheader('Original vs Prediction')
fig2=plt.figure(figsize=(12,6))
plt.plot(y_test,'b',label='ORIGINAL PRICE')
plt.plot(y_predicted,'r',label='PREDICTED PRICE')
plt.xlabel('TIME')
plt.ylabel('PRICE')
plt.legend()
st.pyplot(fig2)
```

SYSTEM ARCHITECTURE:





GITHUB LINKS&FOLDER STRUCTURE:



https://github.com/andevarun/Stock-market-prediction

TESTING

The purpose of testing is to get errors. Testing is that the process of trying to get every conceivable fault or weakness during a work product. It provides how to see the functionality of components, sub-assemblies, assemblies, and/or a finished product it's the method of exercising software with the intent of ensuring that the software meets its requirements and user expectations and doesn't fail unacceptably.

There are various sorts of tests. Each test type addresses a selected testing requirement.

The various types of testing that follow are listed below.

UNIT TESTING

Unit testing involves the planning of test cases that validate that the interior program logic is functioning properly, which program inputs produce valid outputs. All decision branches and internal code flow should be validated. it's the testing of individual software units of the appliance.

It is done after the completion of a private unit before integration. this is often structural testing, that relies on knowledge of its construction and is invasive. Unit tests perform basic tests at the component level and test a selected business process, application, and/or system configuration.

Unit tests make sure that each unique path of a business process performs accurately to the documented specifications and contains clearly defined inputs and expected results.

INTEGRATION TESTING

Integration tests are designed to check integrated software components to work out if they run together with the program. Testing is event-driven and is more concerned with the essential outcome of screens or fields.

Integration tests demonstrate that although the components were individually satisfied, as shown by successful unit testing, the mixture of components is

correct and consistent. Integration testing is specifically aimed toward exposing the issues that arise from the mixture of components.

VALIDATION TESTING

Validation testing is that the process of ensuring if the tested and developed software satisfies the client/user needs. The business requirement logic or scenarios need to be tested intimately. All the critical functionalities of an application must be tested here.

As a tester, it's always important to understand the way to verify the business logic or scenarios that are given to you. One such method that helps intimately evaluation of the functionalities is that the Validation Process.

SYSTEM TESTING

System testing of software or hardware is testing conducted on an entire, integrated system to gauge the system's compliance with its specified requirements.

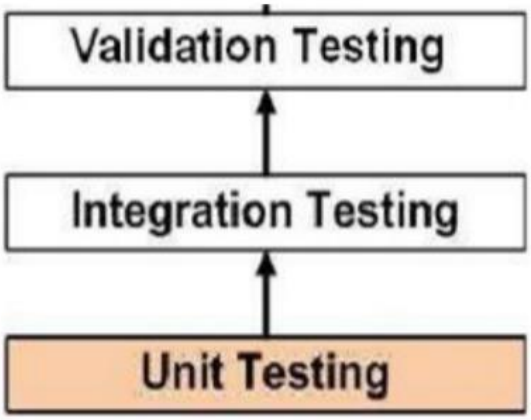
System testing falls within the scope of recorder testing, and intrinsically, should require no knowledge of the inner design of the code or logic.

As a rule, system testing takes, as its input, all of the "integrated" software components that have successfully passed integration testing and also the software itself integrated with any applicable hardware system(s).

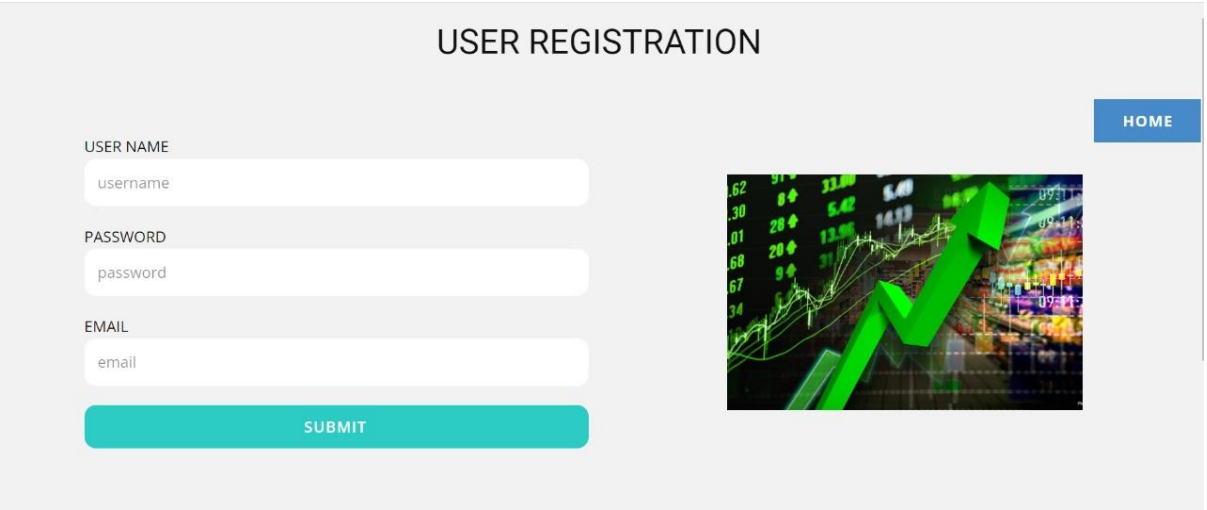
System testing may be a more limited sort of testing; it seeks to detect defects both within the "inter-assemblages" and also within the system as an entire.

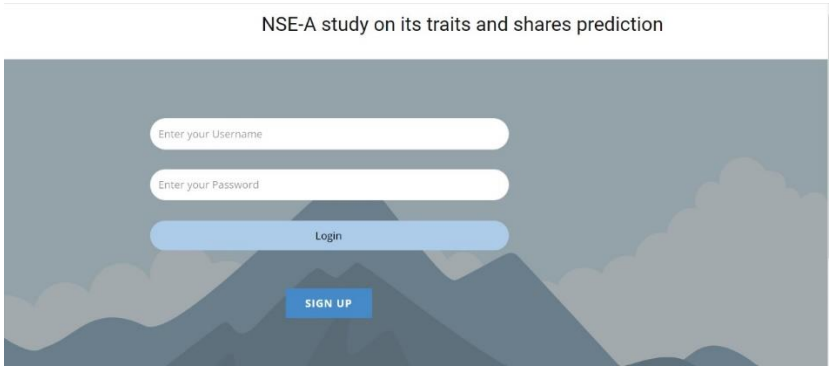
System testing is performed on the whole system within the context of a Functional Requirement Specification(s) (FRS) and/or a System Requirement Specification (SRS).

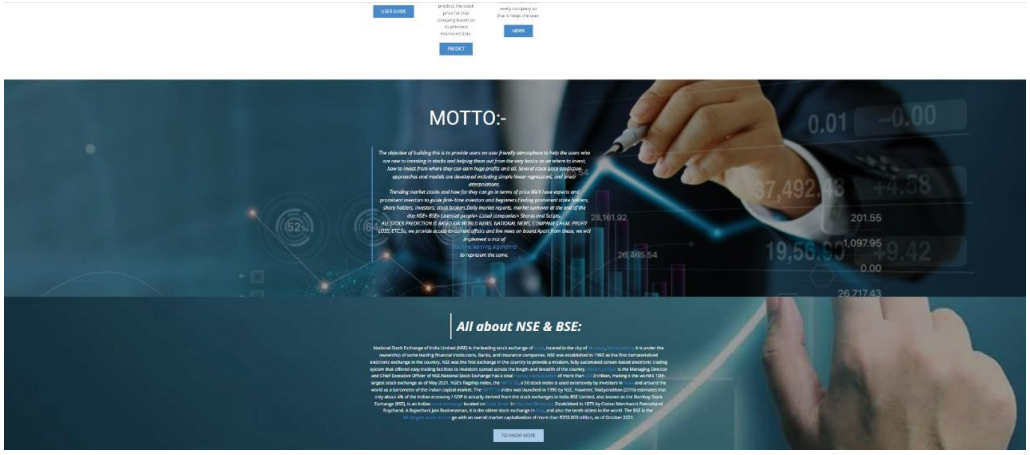
System testing tests not only the planning but also the behavior and even the believed expectations of the customer. it's also intended to check up to and beyond the bounds defined within the software/hardware requirements specification(s).

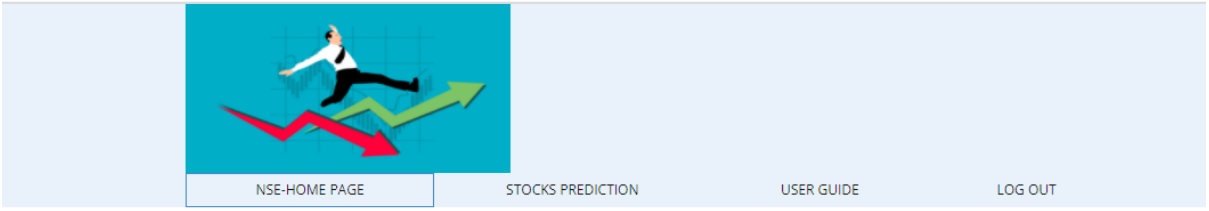

Validation Testing
Integration Testing
Unit Testing

RESULT SCREENSHOTS









STOCK MARKET PREDICTION

--A study on it's traits and shares prediction

USER GUIDE

to view market updates,quick links for investors, corporates and members.

USER GUIDE

PREDICT THE STOCKS

This basically deals with the data manipulated in the above module and predicts the stock price for that company based on its previous estimated data.

PREDICT

VIEW DASHBOARD

This module includes graphs plotted based on predictions vs original price

DASHBOARD

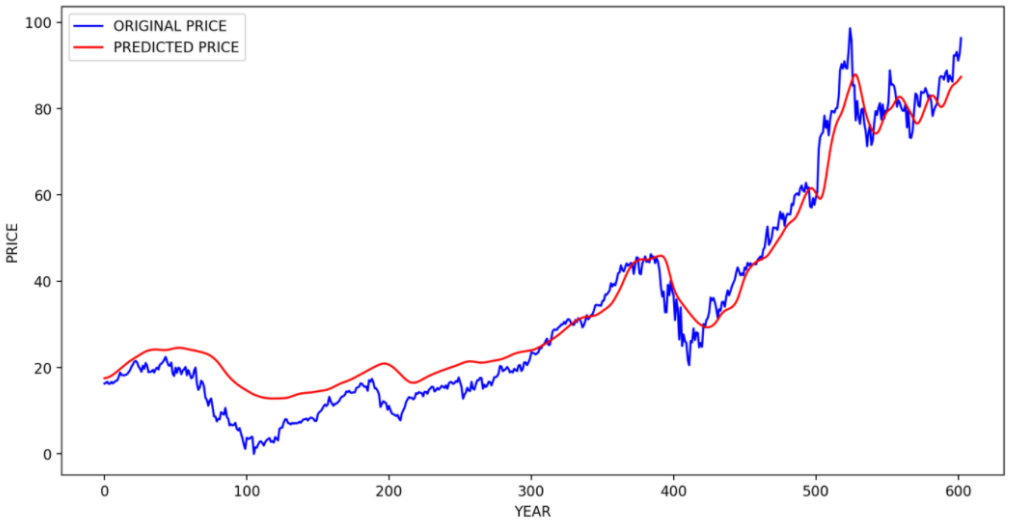
STOCK PRICE PREDICTION

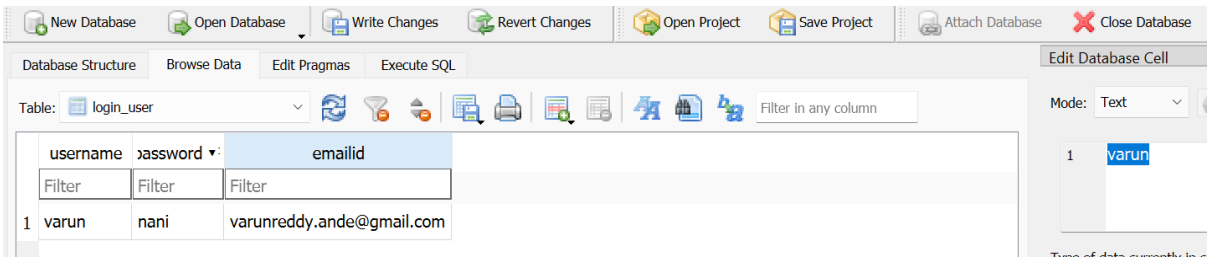
Enter Stock Ticker(symbol assigned to stock):

AAPL

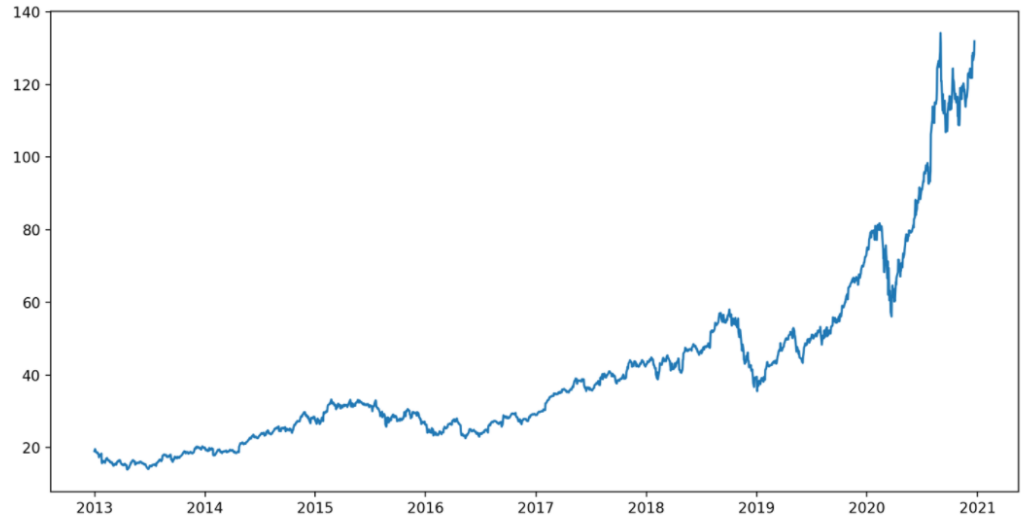
	High	Low	Open	Close	Volume	Ad
count	2,010.0000	2,010.0000	2,010.0000	2,010.0000	2,010.0000	2,01
mean	41.1969	40.3495	40.7670	40.7911	192,371,601.1940	3
std	24.8575	24.1255	24.4996	24.5147	131,850,939.4048	2
min	14.2714	13.7536	13.8561	13.9475	45,448,000.0000	1
25%	25.0244	24.5344	24.7025	24.7369	106,185,100.0000	2
50%	32.5875	32.0700	32.2725	32.2537	150,413,200.0000	2
75%	48.3869	47.5975	47.9138	47.9494	234,403,800.0000	4
max	137.9800	130.5300	137.5900	134.1800	1,460,852,400.0000	13

Original vs Prediction

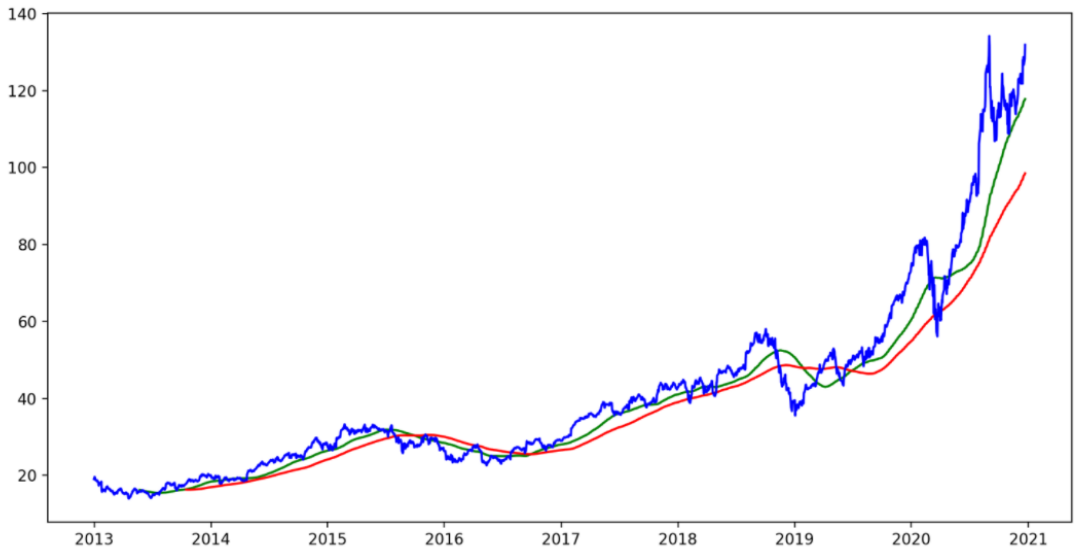




Closing price vs Year



Closing price vs Year with 100MA and 200MA



USER-GUIDE

A user guide, also commonly known as a user manual, is **intended to assist users in using a particular product, service or application.** It's usually written by a technician, product developer, or a company's customer service staff. ... Most user guides contain both a written guide and associated images.

This user guide contains three fields:

1.View Market updates

2.Quick Links

3.Listed Companies

VIEW MARKET UPDATES

QUICK LINKS FOR INVESTORS CORPORATES AND MEMBERS

INVESTING IN STOCKS

User Experience- Register/Login Page

1. Home Page:

1.1. It includes a brief description of NSE and its objectives.

2.Login/Signup:

2.1. This module deals with basic sign-in and login into our portal either using g-mail, meta, or by providing the users with a username and password text fields.

3. User Guides:

3.1. It includes market updates

3.2. Quick links for corporators, investments, and members.

3.3. An overview of listed companies>licensed people>shares and scripts

CONCLUSION

To conclude, Stock or a Share is an unpredictable mechanism that follows the segments of the chain and the dependencies of the same are unpredictable. It is defined to be a curve that 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 dependency 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 dependencies makes it more feasible and flexible causing it even harder to predict. The approximate values are taken into consideration and the hit or profit or the gain rate is calculated for the same.

In this 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 a 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 objective behind choosing this project is to provide users an efficient platform to know, invest and endure.

FUTURE SCOPE

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

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

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

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