# STOCK PRICE PREDICTOR

*A Project Report Submitted in partial fulfilment of the*  *Requirements for the award of Theme Based Project for the VI semester*

**BACHELOR OF ENGINEERING**

IN

# INFORMATION TECHNOLOGY

By

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*Under the guidance of*

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**Assistant Professor**

Diagram

Description automatically generated

**Department of Information Technology**

**Vasavi College Of Engineering (Autonomous)**

***ACCREDITED BY NAAC WITH 'A++' GRADE***

**(Affiliated to Osmania University) Ibrahimbagh,**

**Hyderabad-31**

**2021-2022**

**Vasavi College Of Engineering (Autonomous)**

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****

# DECLARATION BY THE CANDIDATES

We, **FOUZAN AHMED, M.A.MOQEET AND KAVISH NAYEEM** bearing hall ticket number, **1602-19-737-011,1602-19-737-021 AND 1602-19-737-023,** hereby declare that the project report entitled **“STOCK PRICE PREDICTOR”** under the guidance of **Ms. L.Divya**, Internal Guide, Department of Information Technology, Vasavi College of Engineering, Hyderabad, is submitted in partial fulfilment of the requirement of THEME BASED PROJECT of VI 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.

**1602-19-737-011 (FOUZAN AHMED)**

**1602-19-737-021 (M.A. MOQEET)**

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Diagram

Description automatically generated

**BONAFIDE CERTIFICATE**

This is to certify that the project entitled “**STOCK PRICE PREDICTOR**” being submitted by **FOUZAN AHMED, M.A.MOQEET AND KAVISH NAYEEM** bearing hall ticket number,**1602-19-737-011,1602-19-737-021 AND 1602-19-737-023,**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.

Ms. L.Divya Mr. Amit Kumar Gupta Dr. K. Ram Mohan Rao,

External Examiner Professor

Internal Guide HOD, IT

# ACKNOWLEDGEMENT

The satisfaction that accompanies that the successful completion of the project would not have been possible without the kind support and help of many individuals. We would like to extend my sincere thanks to all of them. We would like to use this opportunity to thank our Head of Department **Dr. K. Ram Mohan Rao.** We would also like to take the opportunity to express our humble gratitude to Ms. L. Divya (Internal Guide) under whom we executed this project. 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.

We feel to acknowledge our indebtedness and deep sense of gratitude to our guide Ms. Divya whose valuable guidance and kind supervision give to us throughout the practice which shaped the present work as its show.

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10. **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 project focuses on the use of Regression and LSTM based Machine learning to predict stock values.Stock price prediction is a classic and important problem. With a successful model for stock prediction, we can gain insight about market behavior over time, spotting trends that would otherwise not have been noticed. The motivated idea is that, if we know all information about todays stock trading (of all specific traders), the price is predictable. In this project, we have an option of predicting stock trend of 30 days, which uses our own algorithm or predicting stock prices which utilizes the FBprophet algorithm.

# 2. Introduction

## 2.1 **PURPOSE**

### **WHAT IS STOCKS?**

A stock is a financial instrument that represents ownership in a company or corporation

and represents a proportionate claim on its assets (what it owns) and earnings(what it generates in profits). Stocks are also called shares or a company's equity. Stock ownership implies that the shareholder owns a slice of the company equal to the number of shares held as a proportion of the company's total outstanding shares. For instance, an individual or entity that owns 100,000 shares of a company with one million outstanding shares would have a 10% ownership stake in it. Most companies have outstanding shares that run into the millions or billions.

### **HOW DOES THE STOCK MARKET WORK?**

The term "stock market" often refers to one of the major stock market indexes, such as the Dow Jones Industrial Average or the Standard & Poor's 500. When you purchase a public company's stock, you're purchasing a small piece of that company. Because it's hard to track every single company, the Dow and S&P indexes include a section of the stock market and their performance is viewed as representative of the entire market. You’ll usually buy stocks online through the stock market, which anyone can access with a brokerage account, robo-advisor or employee retirement plan. You don’t have to officially become an “investor” to invest in the stock market — for the most part, it’s open to anyone. The stock market is regulated by the U.S. Securities and Exchange Commission, and the SEC’s mission is to “protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation." In June 2021, the SEC launched a public service campaign to encourage new investors, particularly those in historically underserved communities, to use the stock market to build long-term wealth. You might see a news headline that says the stock market has moved lower, or that the stock market closed up or down for the day. Most often, this means stock market indexes have moved up or down, meaning the stocks within the index have either gained or lost value as a whole. Investors who buy and sell stocks hope to turn a profit through this movement in stock prices.

## **2.2 DOCUMENT CONVENTIONS**

Main Heading Font size: 24 (bold fonts)

Sub-headings Font size: 16 (bold fonts)

Sub-headings Content Font size: 14 (normal fonts)

## **2.3 INTENDED AUDIENCE**

The intended audience for this document are the development team, The project

other tech-savvy enthusiasts who wish to further work on the project.

## **2.4 PRODUCT SCOPE**

There are many products out there that predict stocks prices using different machine learning algorithms. The Stock Price Predictor provides the similar functionality but with better results and additional benefits.

## **2.5 PROBLEM DEFINITION**

The stock market appears in the news every day. You hear about it every time it reaches a new high or a new low. The rate of investment and business opportunities in the Stock market can increase if an efficient algorithm could be devised to predict the short-term price of an individual stock. Previous methods of stock predictions involve the use of Artificial Neural Networks and Convolution Neural Networks which has an error loss at an average of 20%. In this report, we will see if there is a possibility of devising a model using Recurrent Neural Network which will predict stock price with a less percentage of error. And if the answer turns to be YES, we will also see how reliable and efficient this model will be

# 3.Literature Survey

**3.1 SYSTEM REVIEW**

This survey is done to comprehend the need and prerequisite of the general population of investors, and to do as such, we went through different sites and applications and looked for the fundamental data. Based on these data, we made an audit that helped us get new thoughts and make different arrangements for our task. We reached the decision that there is a need of such application and felt that there is a decent extent of progress in this field too.

3.2 **TECHNOLOGY USED**

* PYTHON - Python is an interpreted, high-level, general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects. Python is dynamically typed AND supports multiple programming paradigms, including procedural, object-oriented, and functional programming.
* STREAMLIT - Streamlit is an open-source python framework for building web apps for Machine Learning and Data Science
* FbProphet is a powerful time series analysis package released by Core Data Science Team at Facebook. It is simple and easy to go package for performing time series analytics and forecasting at scale.
* MACHINE LEARNING - Machine learning is the [scientific study o](https://en.wikipedia.org/wiki/Branches_of_science)f [algorithms a](https://en.wikipedia.org/wiki/Algorithm)nd [statistical models t](https://en.wikipedia.org/wiki/Statistical_model)hat [computer systems u](https://en.wikipedia.org/wiki/Computer_systems)se in order to perform a specific task effectively without using explicit instructions, relying on patterns and inference instead. It is seen as a subset of [artificial intelligence.](https://en.wikipedia.org/wiki/Artificial_intelligence) Machine learning algorithms build a [mathematical model b](https://en.wikipedia.org/wiki/Mathematical_model)ased on sample data.

**4. System Requirements and Specifications**

**Software Requirements Specification**

Python

* Atom
* Jupyter Notebook
* Hyper

Operating System

* Windows or macOS

**Hardware Requirements Specification**

Laptop with basic hardware**.**

**Requirement Analysis**

Python: Python is the basis of the program that we wrote.

It utilizes many of the python libraries.

OS: Program is tested on Windows 10 build 1903 and PopOS 19.04

Laptop: Used to run our code.

**5. Proposed Method**

**Architecture**

Diagram

Description automatically generated

Diagram

Description automatically generated

Graphical user interface

Description automatically generated with medium confidence

Table

Description automatically generated

**6. Implementation**

**Code:**

**Main.py**

import streamlit as st

from datetime import date

import yfinance as yf

import pandas as pd

import numpy as np

import keras

import tensorflow as tf

from keras.preprocessing.sequence import TimeseriesGenerator

import matplotlib.pyplot as plt

import plotly.graph\_objs as go

from keras.models import Sequential

from keras.layers import LSTM, Dense

import math

START = "2017-05-01"

TODAY = date.today().strftime("%Y-%m-%d")

st.title('Predict Stock Trends ')

stocks = ('TTM', 'RELI', 'IBM', 'SBIN.NS','MSFT')

selected\_stock = st.selectbox('Select dataset for prediction', stocks)

title= selected\_stock

num\_prediction = st.slider('Days of prediction:', 10, 30)

@st.cache

def load\_data(ticker):

data = yf.download(ticker, START, TODAY)

data.reset\_index(inplace=True)

return data

data\_load\_state = st.text('Loading data...')

df = load\_data(selected\_stock)

data\_load\_state.text('Loading data... done!')

st.subheader('Raw data')

st.write(df.tail())

close\_data = df['Close'].values

close\_data = close\_data.reshape((-1,1))

split\_percent = 0.80

split = int(split\_percent\*len(close\_data))

close\_train = close\_data[:split]

close\_test = close\_data[split:]

date\_train = df['Date'][:split]

date\_test = df['Date'][split:]

look\_back = 15

train\_generator = TimeseriesGenerator(close\_train, close\_train, length=look\_back, batch\_size=20)

test\_generator = TimeseriesGenerator(close\_test, close\_test, length=look\_back, batch\_size=1)

model = Sequential()

model.add(

LSTM(10,

activation='relu',

input\_shape=(look\_back,1))

)

model.add(Dense(1))

model.compile(optimizer='adam', loss='mse')

num\_epochs = 15

model.fit(train\_generator, epochs=num\_epochs, verbose=1)

prediction = model.predict(test\_generator)

close\_train = close\_train.reshape((-1))

close\_test = close\_test.reshape((-1))

prediction = prediction.reshape((-1))

trace1 = go.Scatter(

x = date\_train,

y = close\_train,

mode = 'lines',

name = 'Data'

)

trace2 = go.Scatter(

x = date\_test,

y = prediction,

mode = 'lines',

name = 'Prediction'

)

trace3 = go.Scatter(

x = date\_test,

y = close\_test,

mode='lines',

name = 'Ground truth'

)

layout = go.Layout(

title= selected\_stock +" Stocks",

xaxis = {'title' : "Date"},

yaxis = {'title' : "Close"}

)

fig = go.Figure(data=[trace1, trace2, trace3], layout=layout)

st.plotly\_chart(fig)

close\_data = close\_data.reshape((-1))

num\_prediction=math.floor(num\_prediction/10)\*10

def predict(num\_prediction, model):

prediction\_list = close\_data[-look\_back:]

for \_ in range(num\_prediction):

x = prediction\_list[-look\_back:]

x = x.reshape((1, look\_back, 1))

out = model.predict(x)[0][0]

prediction\_list = np.append(prediction\_list, out)

prediction\_list = prediction\_list[look\_back-1:]

return prediction\_list

def predict\_dates(num\_prediction):

last\_date = df['Date'].values[-1]

prediction\_dates = pd.date\_range(last\_date, periods=num\_prediction+1).tolist()

return prediction\_dates

forecast = predict(num\_prediction, model)

forecast\_dates = predict\_dates(num\_prediction)

trace1 = go.Scatter(

x = df['Date'].tolist(),

y = close\_data,

mode = 'lines',

name = 'Data'

)

trace2 = go.Scatter(

x = forecast\_dates,

y = forecast,

mode = 'lines',

name = 'Prediction'

)

layout = go.Layout(

title= selected\_stock +" Stocks",

xaxis = {'title' : "Date"},

yaxis = {'title' : "Close"}

)

fig = go.Figure(data=[trace1, trace2], layout=layout)

st.plotly\_chart(fig)

index.html

<!DOCTYPE html>

<html lang="en" dir="ltr">

<head>

<meta charset="utf-8">

<title>Stock Price Predictor</title>

<link rel="stylesheet" href="css/styles.css">

<link rel="shortcut icon" href="favicon.ico">

<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.1.3/dist/css/bootstrap.min.css" rel="stylesheet" integrity="sha384-1BmE4kWBq78iYhFldvKuhfTAU6auU8tT94WrHftjDbrCEXSU1oBoqyl2QvZ6jIW3" crossorigin="anonymous">

</head>

<body>

<ul class="nav">

<li class="brand mx-5">

<div class="logo" >

<img src="logo.jpeg" style="width:35px;display:inline-block;">

<h5 style="display:inline-block;color:white; margin-left:10px; padding-top:3px;">Stock Price Predictor</h5>

</div>

<li class ="nav-item" >

<div class="dropdown">

<button class="dropbtn">Invest</button>

<div class="dropdown-content">

<a href="https://groww.in/">Groww</a>

<a href="https://static.olymptrade.com/lands/GA-FX-LPL65-02-01en/?ref=g\_in\_search\_brand\_fx\_1596619339&utm\_source=google&utm\_medium=search&utm\_campaign=g\_in\_search\_brand\_1596619339&utm\_term=m\_\_\_%2Bolymp%20%2Btrade&utm\_content=122926092162\_516502153841&noredirect=1&retargeting=1&noretargeting&gclid=CjwKCAiA-9uNBhBTEiwAN3IlNBuZjenb3AstrMNUv5GGal0t6bBcNRYrM9YC8kUHMOj0I5hachSiDhoCjwIQAvD\_BwE">Olymp Trade</a>

<a href="https://upstox.com/open-demat-account/">Upstox</a>

<a href="https://invstr.com/">Invstr</a>

</div>

</div></li>

</ul>

<div class="div0">

<div class="container"style="text-align:center; left:50px; top:20%; position:absolute;">

<h1 style="font-weight:100; font-size:42px;">WELCOME TO STOCK PRICE PREDICTOR</h1>

</div>

<div class="container" style="text-align:center; bottom: 25%; left:50px;position: absolute; ">

<button onclick="window.location.href='http://localhost:8501'" class="button\_slide slide\_down my-4 mx-4" type="button" name="button" style="height:60px;font-size: 20px; width:180px; font-weight:200;" ><strong>Predict Trends</strong></button>

<button onclick="window.location.href='http://localhost:8502'" class="button\_slide slide\_down my-4 mx-4" type="button" name="button" style="height:60px;font-size: 20px; width:180px; font-weight:200;" ><strong>Predict Price</strong></button> </div>

</div>

<div class="div1">

<div class="container"style="text-align:center; left:50px;bottom: 30%; position:absolute;">

<h1 style="font-weight:100; font-size:42px;">WHAT IS STOCK?</h1>

<button onclick="collapsible()" class="button\_slide slide\_down my-4" type="button" name="button"><strong>LEARN-MORE</strong></button>

<div class="content container" style="text-align:center;">

<p>A stock is a financial instrument that represents ownership in a company or corporation and represents a proportionate claim on its assets (what it owns) and earnings (what it generates in profits). Stocks are also called shares or a company's equity. Stock ownership implies that the shareholder owns a slice of the company equal to the number of shares held as a proportion of the company's total outstanding shares. For instance, an individual or entity that owns 100,000 shares of a company with one million outstanding shares would have a 10% ownership stake in it. Most companies have outstanding shares that run into the millions or billions.

</p>

</div>

</div>

</div>

<div class="div2">

<div class="container"style="text-align:center; left:50px;bottom: 30%; position:absolute;">

<h1 style="font-weight:100; font-size:42px;">HOW DOES THE STOCK MARKET WORK?</h1>

<button onclick="collapsible()" class="button\_slide slide\_down my-4" type="button" name="button"><strong>LEARN-MORE</strong></button>

<div class="content container" style="text-align:center;">

<p>Stocks offer investors the greatest potential for growth (capital appreciation) over the long haul. Investors willing to stick with stocks over long periods of time, say 15 years, generally have been rewarded with strong, positive returns. There’s no guarantee that the company whose stock you hold will grow and do well, so you can lose money you invest in stocks. If a company goes bankrupt and its assets are liquidated, common stockholders are the last in line to share in the proceeds. The company’s bondholders will be paid first, then holders of preferred stock. If you are a common stockholder, you get whatever is left, which may be nothing. Even when companies aren’t in danger of failing,. Large company stocks as a group.

</p>

</div>

</div>

</div>

<div class="div3">

<div class="container"style="text-align:center; left:50px;bottom: 30%; position:absolute;">

<h1 style="font-weight:100; font-size:42px;">WHAT ARE THE BENEFITS AND RISKS OF STOCKS? </h1>

<button onclick="collapsible()" class="button\_slide slide\_down my-4" type="button" name="button"><strong>LEARN-MORE</strong></button>

<div class="content container" style="text-align:center;">

<p>Stocks offer investors the greatest potential for growth (capital appreciation) over the long haul. Investors willing to stick with stocks over long periods of time, say 15 years, generally have been rewarded with strong, positive returns. There’s no guarantee that the company whose stock you hold will grow and do well, so you can lose money you invest in stocks. If a company goes bankrupt and its assets are liquidated, common stockholders are the last in line to share in the proceeds. The company’s bondholders will be paid first, then holders of preferred stock. If you are a common stockholder, you get whatever is left, which may be nothing. Even when companies aren’t in danger of failing,. Large company stocks as a group.

</p>

</div>

</div>

</div>

<script type="text/javascript">

function collapsible(){

var coll = document.getElementsByClassName("button\_slide");

var i;

for (i = 0; i < coll.length; i++) {

coll[i].addEventListener("click", function() {

this.classList.toggle("active");

var content = this.nextElementSibling;

if (content.style.display === "block") {

content.style.display = "none";

} else {

content.style.display = "block";

}

});

}

}

</script>

<div class="footer">

<div class="aligning my-3">

<a class="footer-link mx-5" style="color:darkgrey" href="#">STOCK PRICE PREDICTOR &copy 2022</a>

<a class="footer-link mx-5" href="https://www.linkedin.com/">LinkedIn</a>

<a class="footer-link mx-5" href="https://twitter.com/">Twitter</a>

<a class="footer-link mx-5" href="https://github.com/kavishnayeem/StockPricePredictor">Github</a>

<p style="color:white;font-size:12px;font-weight: 100;padding-top:5px;">©2022.FOUZAN-MOQEET-KAVISH</p>

</div>

</div>

</body>

</html>

**6. Results**

Graphical user interface

Description automatically generated with low confidence

Graphical user interface, website

Description automatically generated

Graphical user interface

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated with medium confidence

Chart, histogram

Description automatically generated

A screenshot of a computer

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated with medium confidence

#### **8. Conclusion and Future Scope**

**Conclusion**

Thus, we could comprehend that the prediction of stock prices is certainly possible. By using our application, new investors can see which stock to invest into for maximum return. It completely meets the objectives and requirements of the system. It successfully analyses the data and predicts the price of the upcoming stocks.

**Future Scope**

* To make the application available on Android application.
* To make a recommendation system for stocks to new users.

9. GITLAB LINK:

* <https://gitlab.vce.ac.in/2122-V-A-MPII-4-web-Stockpred/batch04-it_a_visem-2021-22_stockpricepredictor>

**Graphical user interface, text, application

Description automatically generated**