

GOOGLE STOCK PRICE PREDICTION

A

Project Report

Submitted

*In partial fulfillment for the
award of the Degree of **Bachelor**
of Technology*

In

Computer Science & Engineering



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Session (2018-19)



CERTIFICATE

This is to certify that **Vikram Singh Gurjar, Rahul Kumar, Nasar Jami And Yashwant Kholwar** of VII Semester, B. Tech (Computer Science & Engineering) “2018-2019”, has completed a minor project “**Google Stock Price Prediction.**” in partial fulfillment for the award of the degree of Bachelor of Technology under Rajasthan Technical University.

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CANDIDATE'S DECLARATION

We hereby declare that the work, which is being presented in the Project, entitled **“Google Stock Price Prediction.”** in partial fulfillment for the award of Degree of **“Bachelor of Technology”** in Department of Computer Science & Engineering with Specialization in Computer Engineering, **and submitted to the Department of Computer Science & Engineering,**

University Teaching Department, Rajasthan Technical University is a record of my own investigations carried under the Guidance of **Mr. Gaurav Kumar(Asst. prof.) And R.S.Sharma(Proff.)** Department of Computer Science & Engineering.

I have not submitted the matter presented in this Report anywhere for the award of any other Degree.

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ABSTRACT

Stock price prediction is one among the complex machine learning problems. It depends on a large number of factors which contribute to changes in the supply and demand. This paper presents the technical analysis of the various strategies proposed in the past, for predicting the price of a stock, and evaluation of a novel approach for the same. Stock prices are represented as time series data and neural networks are trained to learn the patterns from trends. Along with the numerical analysis of the stock trend, this research also considers the textual analysis of it by analyzing the public sentiment from online news sources and blogs. Utilizing both this information, a merged hybrid model is built which can predict the stock trend more accurately.

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1.INTRODUCTION

Stock price is the price of a single stock among the number of stocks sold by a company listed in public offering. Having stocks of a public company allows you to own a portion of it. Original owners of the company initially sell the stocks to get additional investment to help the company grow. This initial offering of stocks to the public is called Initial Public Offering (IPO). Stock prices change because of the supply and demand. Suppose, if many people are willing to buy a stock, then the price goes up as there is more demand. If more people are willing to sell the stock, the price goes down as there is more supply than the demand. Though understanding supply and the demand is relatively easy, it is hard to derive what factors exactly contribute to the increase in demand or supply. These factors would generally boil down to socioeconomic factors like market behavior, inflation, trends and more importantly, what is positive about the company in the news and what's negative. Predicting the accurate stock price has been the aim of investors ever since the beginning of the stock market. Millions of dollars worth of trading happens every single day, and every trader hopes to earn profit from his/her investments. Investors who can make right buy and sell decisions will end up in profits. To make right decisions, investors have to judge based on technical analysis, such as company's charts, stock market indices and information from newspapers and microblogs. However, it is difficult for investors to analyze and forecast the market by churning all this information. Therefore, to predict the trends automatically, many Artificial Intelligence (AI) techniques have been investigated. Some of the first research in prediction of stock prices dates back to 1994, in which a comparative study with machine learning regression models was performed. Since then, many researchers were investing resources to devise strategies for forecasting the price of the stock.

1.1 Motivation

Efficient Market Hypothesis is one of the popular theories in financial economics. Prices of the securities reflect all the information that is already available and it is impossible to outperform the market consistently. There are three variants of Efficient Market Hypothesis (EMH); namely weak form, semi-strong form and the strong form. Weak form states that the securities reflect all the information that is publicly available in the past. Semi Strong form states that the price reflects all the publicly available data and also, they change instantly to reflect the newly available information. The strong form would include even the insider or private information. But this theory is often disputed and highly controversial. The best example would be investors such as Warren Buffet, who have earned huge profits over long period of time by consistently outperforming the market. Even though predicting the trend of the stock price by manually interpreting the chaotic market data is a tedious task, with the advent of

artificial intelligence, big data and increased computational capabilities, automated methods of forecasting the stock prices are becoming feasible. Machine learning models are capable of learning a function by looking at the data without explicitly being programmed. But unfortunately, the time series of a stock is not a function that can be easily mapped. It can be best described more as a random walk, which makes the feature engineering and prediction much harder. With Deep Learning, a branch of machine learning, one can start training using the raw data and the features will be automatically created when neural network learns. Deep Learning techniques are among those popular methods that have been employed, to identify the stock trend from large amounts of data but until now there is no such algorithm or model which could consistently predict the price of future stock value correctly. Lot of research is going on both in academia and industry on this challenging problem

1.2 Problem Statement

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 will this model be.

2. FEASIBILITY STUDY

Proposed system is feasible considering the technical, economical and operation factors. By having a detailed feasibility study the management will have a clear view of the proposed system with its benefits and drawbacks. The system has been tested for feasibility in the following aspects.

- Technical Feasibility
- Economic Feasibility
- Operational Feasibility

- **Technical Feasibility**

With the advent of the digital computer, stock market prediction has since moved into the technological realm. The most prominent technique involves . ANNs can be thought of as mathematical function approximators. A form of ANN that is more appropriate for stock prediction is the time RNN. Examples of RNN and TDNN are the Elman, Jordan, and Elman-Jordan networks

- **Economic Feasibility**

The cost is not the boundary for inventions. Cost is the secondary thing required for system to execute successful. But the primary thing is to invent the new things which should fulfill the needs efficiently and effectively. Since the proposed system is an integral part of the centralized computerization of total organizational transactions, it is worth to purchase the hardware needed. Thus the proposed system is economically feasible.

- **Operational Feasibility**

The feasibility is carried in order to know whether the system will work with least difficulties when it is developed and installed. And also check whether it support the graphical user interface in this system. Hence, it is concluded that the system is operationally feasible.

3. REQUIREMENT ANALYSIS

Requirement Analysis can be defined in three terms they are:-

3.1 Hardware Requirement:- Linux os,Ram,Cpu

3.2 Software Requirement:- google colab

3.3 Dataset Requirement: Dataset used to implement this project Ex: google stock price prediction from kaggle

3.3 Technology Requirement:- RNN-Deep Learning,Tensorflow/Keras

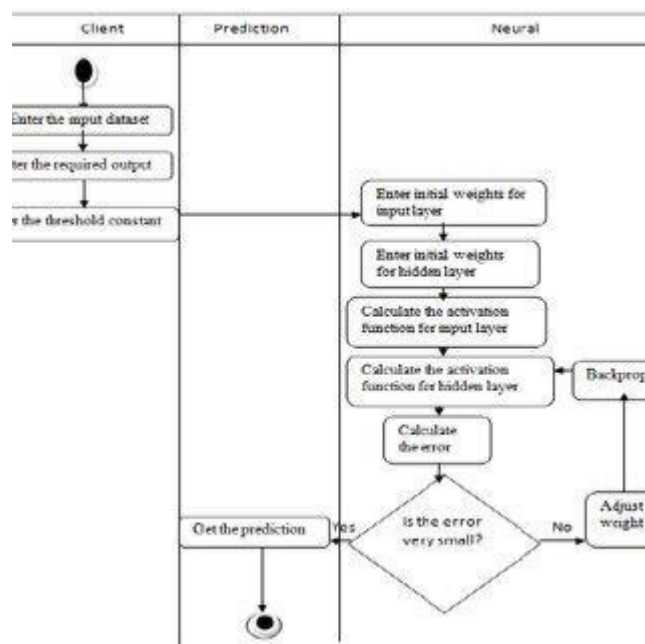
4. SYSTEM ANALYSIS & DESIGN

Design is concerned with the mapping of objects in the problem space into objects in the solution space and creating an overall structure of the system. The Object Oriented Design Methodology involves the following steps:

1. Review of Objects created in the analysis phase
2. Specification of class dependencies
3. Design of classes
4. Identifying the class dependencies

The best approach for Object Oriented Design is Unified Modeling Language (UML). The UML model describes what a system is supposed to do. It doesn't tell how important the system. Various tools are used to present multiple views of the system. The UML enables system builders that create blueprints that capture their visions in a standard, easy-to-understand way and communicate them to others.

4.1 UML Diagrams representing working of project



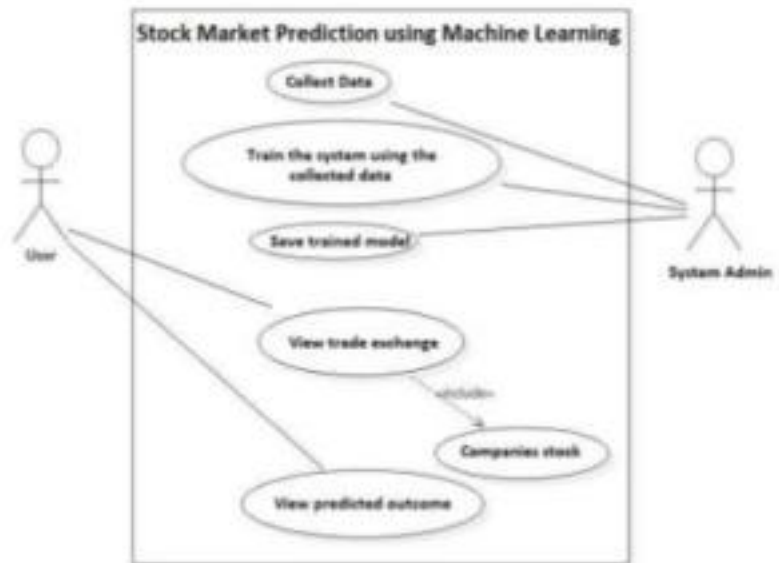
Class Diagram

4.2 Working

Architecture System Design

USE CASE DIAGRAM

1. Data is initially collected from online sources or the stock exchange
2. The data is then used to train the system
3. Trained model is saved
4. User views the trade exchange and stock of a company
5. Using the model, closing prices are predicted



5. IMPLEMENTATION

```
import os

from google.colab import drive
drive.mount('/content/drive')
import os
os.getcwd()
os.chdir('/content/drive/My Drive/deep-learning/day29/')

import pandas as pd
import numpy as np

df=pd.read_csv("google_training.csv")

df=df[['volume','high','low']]

df['avg']=df.iloc[:,1:2].mean(axis=1)

df=df[['volume','avg']]

#this process because i use 30 partition and the shape is (1333,2) so i make
(1330,2)
df1=df.iloc[0:1330,:]

from sklearn.preprocessing import MinMaxScaler
scalling=MinMaxScaler(feature_range=(0,1))
df1=scalling.fit_transform(df1) df1.shape

training_features=[]
training_labels=[]
for i in range(20,len(df1)):
    training_features.append(df1[i-20:i,0:2])
```