SUMMER PROJECT/INTERNSHIP REVIEW-1

Stock Prices Prediction Using Machine Learning

Review-1

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Introduction:

In this project we get the stock information, visualize different aspects of it, and finally we will look at a few ways of analyzing the risk of a stock, based on its previous performance history. We will also be predicting future stock prices through a Long Short Term Memory (LSTM) method.

In the current situation we have seen a drastic change in the stock market and crypto money. By using such a project we may be able to predict this kind of fluctuation in the related area and be warned before losing any primary investment.

Using a Keras Long Short-Term Memory (LSTM) Model to Predict Stock Prices. LSTMs are very powerful in sequence prediction problems because they're able to store past information. This is important in our case because the previous price of a stock is crucial in predicting its future price.

Before this kind of prediction was made there used to be a method called bulls and bears line. A “bull” is an investor who buys shares because they believe the market is going to rise; whereas a “bear” will sell shares as they believe the market is going to turn negative.
The datasets im going to use are two different corporations

1) Apple (comp with amazon,google,microsoft)
2) Tata beverages ptd

Problem Statement:

Here we are using google,amazon,apple stock prices over the last occurrences and based on Brownian Motion, the future variations of stock price are independent of the past. So, it is impossible to predict the exact stock price, but possible to predict and capture the upward and downward trends.

Software Requirement Specification Document
STOCK PRICE PREDICTION

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1.ABSTRACT:

The direction of the financial market is always stochastic and volatile and the return of the security return is deemed to be unpredictable. Analysts now are trying to apply the modeling techniques from Natural Language Processing into the field of Finance as the similarity of having the sequential property in the data. In this research, we have constructed and applied the state-of-art deep learning sequential model, namely Long Short Term Memory Model (LSTM), StackedLSTM and Attention-Based LSTM, along with the traditional ARIMA model, into the prediction of stock prices on the next day.

1.1 INTRODUCTION:

The direction of the financial market is always stochastic and volatile and the return of the security return is deemed to be unpredictable. Analysts now are trying to apply the modeling techniques from Natural Language Processing into the field of Finance as the similarity of having the sequential property in the data. In this research, we have constructed and applied the state-of-art deep learning sequential model, namely Long Short Term Memory Model (LSTM), StackedLSTM and Attention-Based LSTM, along with the traditional ARIMA model, into the prediction of stock prices on the next day.

1.2 LITERATURE SURVEY:

The initial focus of our literature survey was to explore generic online learning algorithms and see if they could be adapted to our use case i.e., working on real-time stock price data. These included Online AUC Maximization , Online Transfer Learning , and Online Feature Selection. However, as we were unable to find any potential adaptation of these for stock price prediction, we then decided to look at the existing systems, analyze the major drawbacks of the same, and see if we could improve upon them.

We zeroed in on the correlation between stock data (in the form of dynamic, long-term temporal dependencies between stock prices) as the key issue that we wished to solve. A brief search of generic solutions to the above problem led us to RNN's and LSTM . After deciding to use an LSTM neural network to perform stock prediction, we consulted a number of papers to study the concept of gradient descent and its various types.

1.3 PROBLEM STATEMENT:
Here we are using google,amazon,apple stock prices over the last occurrences and based on Brownian Motion, the future variations of stock price are independent of the past. So, it is impossible to predict the exact stock price, but possible to predict and capture the upward and downward trends.

1.4 PURPOSE:
This project helps people to know and acknowledge how the trade system works and so that people can trust the companies they invest in.

2.OBJECTIVES:
1.) The change in price of the stock over time
2.) The daily return of the stock on average
3.) The moving average of the various stocks
4.) The correlation between different stocks
5.) How much value do we put at risk by investing in a particular stock?
6.) How can we attempt to predict future stock behavior?

2.1 SYSTEM OVERVIEW:
Artificial intelligence (AI) plays an integral role in our day to day life applications whether it be home environment applications like Alexa or financial applications like trading, it is a development towards a new era of technology.

This project comprises an application of AI on financial data, known as algorithmic trading. Automated trading systems involve the use of complex AI systems to make extremely fast trading decisions like buy, hold, or sell. It involves high frequency trading or HFT to make millions of trades in a day.

Machine learning is a subset of AI and generally provides solutions which learn from experience without being explicitly programmed. In simple words, just the machine learning models are selected and fed with data the model then automatically adjusts its parameters and improves its outcome.

2.2 SYSTEM FEATURES:
Stock price movements are somewhat repetitive in nature in the time series of stock values. The prediction feature of this system tries to predict the stock return in the time series value by training the Neural Network which involves producing an output and correcting the error.

A detailed analysis of the Stock market is presented to the user. The analysis contains the performance of most of the listed companies for certain intervals of days. The numbers and figures are represented in graphs and plots in the form of line charts.

2.3 HARDWARE SPECIFICATION:
Automated Trading systems may sound too complex but require very few hardware costs, you just need a good computer with a good editor and you're ready to go, not much requirement of extra hardware specifications.

2.4 SOFTWARE SPECIFICATION:
Python Idle3.6.5
Numpy
Matplotlib
Pandas
Pandas reader

3.System Analysis & Design :
Technical Analysis is helpful to estimate the future economic stock movement based on stock historical movement. Technical limitations do not forecast stock price, but based on historical analysis, technical limits can forecast the stock movement on existing market conditions over time. Technical examinations help depositors to forecast the stock price movement (up/down) in that specific time interval. Technical examination habits have a wide diversity of charts that show price over period. The company tickers of S&P 500 list from Wikipedia is being saved and abstraction of stock data in contradiction of every company ticker is being done.

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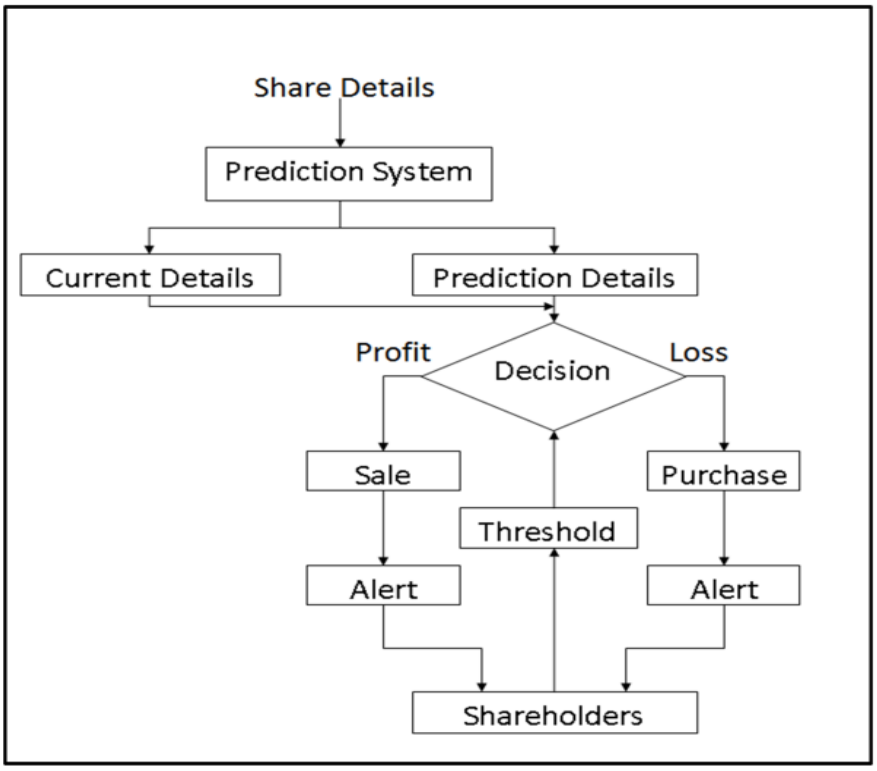
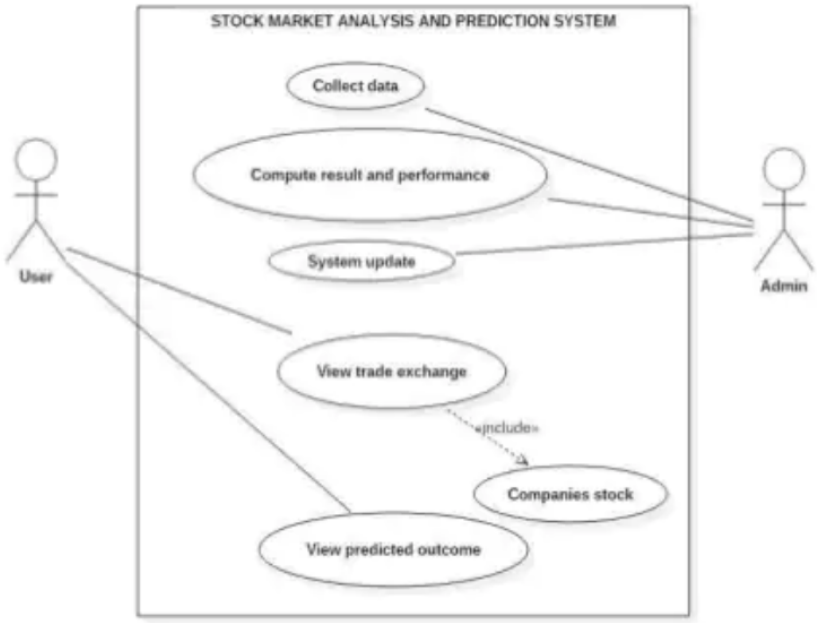


Figure2.Block diagram of stock market prediction

4.1. Use Case Diagram



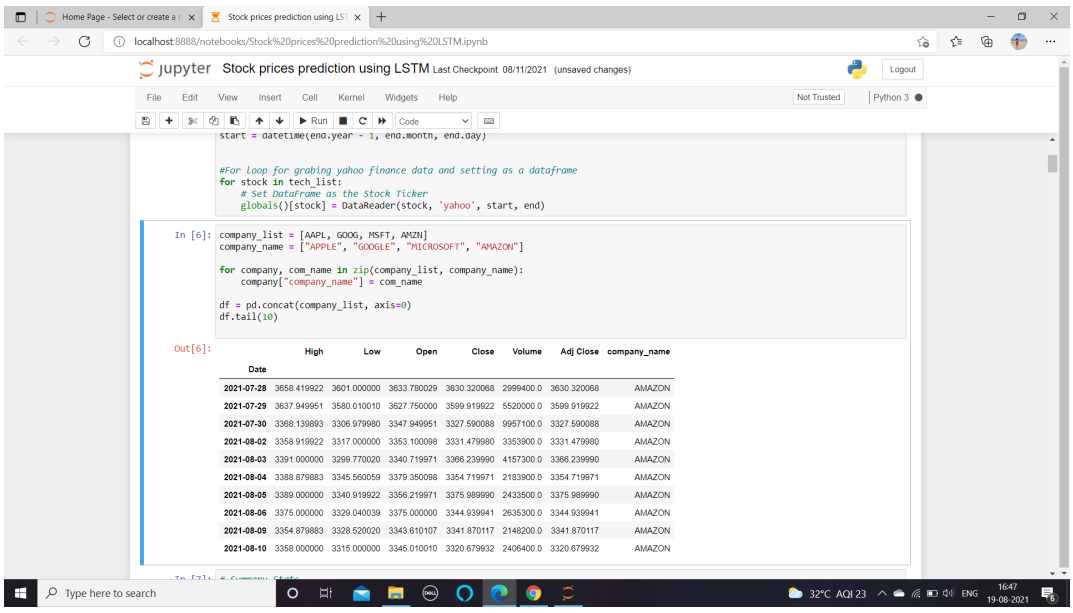
3.1 Requirement Analysis:

Functional requirements are the functions or features that must be included in any system to satisfy the business needs and be acceptable to the users. Based on this, the functional requirements that the system must require are as follows: The system should be able to generate an approximate share price. The system should collect accurate data from the NEPSE website in a consistent manner.

3.2DATA EXTRACTION:

For each table row, a ticker is the table data, clutch the text of it and attach this ticker to the list, to save the list use pickle and if the list changes, modify it to check for specific periods of time. Redeemable the list of tickers, so as not to hit Wikipedia again and again every time the script is run. Have tickers of 500 companies, need the stock estimating data of each company.
Abstract the stock estimating data of the first 15 companies, each company has stock data to around 6000 admissions for each company. The companies which were started after 2000 and have vacant values, their entries of nan are replaced by zero.

4.RESULTS:



5.CONCLUSION:

Hereby, it can be proposed that no trading algorithm can be 100% effective, not only 100%, it will typically never be close to 70% but to attain even an accuracy of 40% or 35% is still good enough to get a good forecast spread. Although extreme attained accurateness was 39%, it was still able to closely forecast the predictable outcome and have coordinated against the company graph. To make our expectation more efficient, it can be done by including bulky data sets that have millions of entries and could train the machine more powerfully.

6.REFERENCES:

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