Project Title: Stock predictor using LSTM model

0.1 Problem Definition:

This project implements some model to predict the stock market of different international company. I have collected the data from https://iextrading.com/. The open data source provided by IEX under the conditions of IEX terms of use. Predictive modeling using machine learning comes with a trick to generalize new cases and not merely memorizing past cases. In order to achieve that, the ML algorithm must look through multiple rows of data, and different features which have significant correlations with target variable. In designing predictive modeling the key is to find a way to identify price trends without the uncertainty and bias of the our mental model.

0.2 Approaches:

Artificial Intelligence has significant applications in the stock price prediction. In this project, I will be talking Apple stock csv format data. Each file provides historically adjusted market-wide data (daily, max. 5 years back). This is a very complex task and has uncertainties. I will develop this project based on how to predict stock price using the LSTM neural network.

0.3 Steps:

The following task involves some stpes to be taken in order to predict the stcok price accurately. I can make them in order below:

- Importing the Libraries.
- Data Analysis
- Pre Processing
- Fitting LSTM Model
- Prediction Phase
- Performance Analysis

0.4 Visualization:

Input data samples are shown in the Figure 1. Here the data contains total 7 columns namely (open,high,low,close,volume,vwap,changeOverTime) and zero non-null object.

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 1258 entries, 2014-02-21 to 2019-02-20
Data columns (total 7 columns):
open              1258 non-null float64
high              1258 non-null float64
low               1258 non-null float64
close             1258 non-null float64
volume            1258 non-null int64
vwap              1258 non-null float64
changeOverTime    1258 non-null float64
dtypes: float64(6), int64(1)
memory usage: 78.6+ KB
```

+Code +Markdown

Figure 1: Data Visualization

0.5 Statistics:

Daily candlestick shows the open, high, low, and close price for the day. This real body represents the price range between the open and close of that day's trading.

```
[17]: df.describe()
```

Out[17]:

	open	high	low	close	volume	vwap	changeOverTime
count	1258.000000	1258.000000	1258.000000	1258.000000	1.258000e+03	1258.000000	1258.000000
mean	128.601988	129.715323	127.475242	128.625531	4.130008e+07	128.630803	0.864622
std	38.228897	38.589302	37.858325	38.223879	2.121789e+07	38.228865	0.554113
min	67.917000	68.435700	67.153900	67.944600	1.147592e+07	57.336300	-0.015040
25%	100.606200	101.521025	99.594625	100.572975	2.628193e+07	100.614450	0.457958
50%	115.902500	116.477250	114.748750	115.852050	3.590316e+07	115.743300	0.679451
75%	156.815750	158.307575	155.190700	156.847525	5.031511e+07	156.551600	1.273742
max	228.995300	231.664500	228.003100	230.275400	1.899781e+08	230.438500	2.338191

Figure 2: Data Description

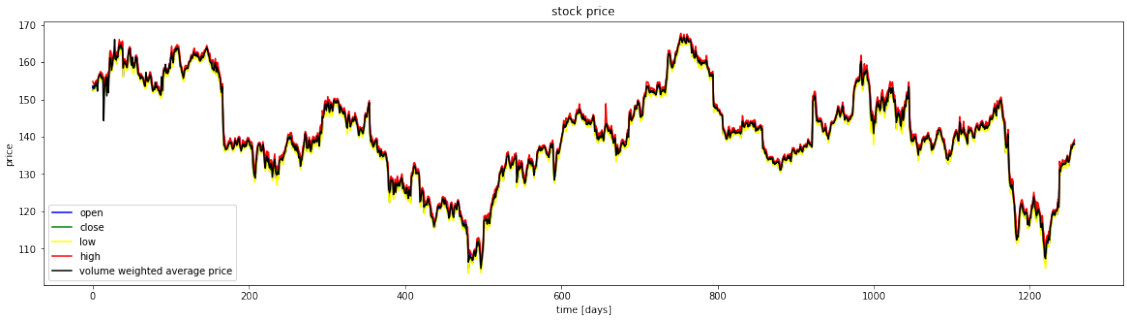

Figure 3: Data Description

We plotted the histogram (Figure 3) of each columns that grows a nice overview about the dataset and it will be much easier to evaluate the calculation process.

0.6 Result:

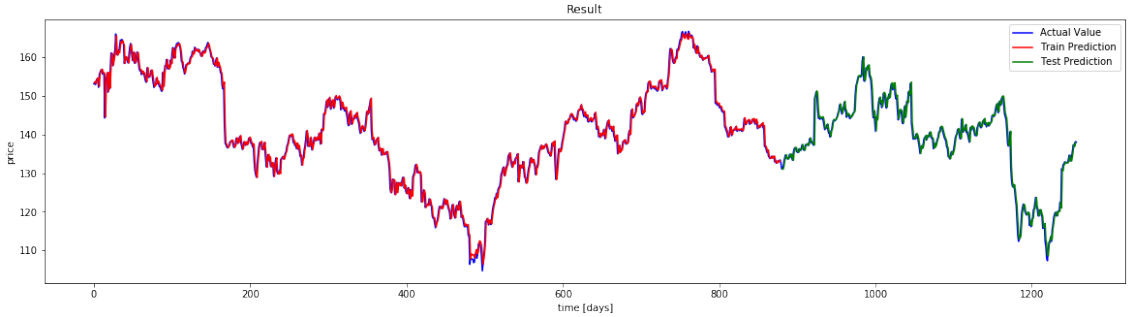

Figure 4: Result

Converted dataframe into a specific array structure (numpy) to feed the data into LSTM. LSTM model fits good in the data prediction. We can see the graphical interface about the accuracy and the error rate.

0.7 Resource:

Drive Link of Code: Click here!

0.8 Conclusion

I have shown a simplified version of how to predict and compute if the strategy taken is effective and can beat market standard. However, there are enough rooms for improvements. Efficient Market Hypothesis (EMH) suggest that stock price also depends on new information significantly; therefore, information about people's opinion can be collected from social media and can be added as a predictor, Moreover, the same model can be tested with hourly or minute frequency to check the effectiveness.

0.9 Student Info

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Thank You!