Python for Finance - 2

Project: Predicting Stock Prices with Machine Learning

My topic is predicting stock prices with machine learning algorithms. I believe that AI, machine learning, coding tools, etc. have completely changed our lives, business life, and almost all other fields, so predicting stock prices with machine learning algorithms is one of them the dynamic financial world, accurate predictions of stock prices play a central role in the decision making of investors and financial institutions. In the past, solving a serious problem with human labour could take days, but now, with the right approach and tools, we can solve thousands of problems simultaneously in a short time. Predicting stock prices is a good example of this, and it really plays a big role for the stock market, banks, and investors. But at the same time, using these predictions for investments is very risky, even if the algorithm and the predictions are perfect ,there is a big margin of error. On the other hand this type of tools and technologies give us the opportunity to create top level projects in which these kinds of technologies can be utilized well.

I have used past Apple Stock Price data from YahooFinance. YahooFinance makes it very easy to share this data. I used the yFinance library and the csv document data I got from YahooFinance to reach the data I need.

I used Linear Regression, DecisionTreeClassifier, Lasso and lastly LSTM in addition. Before I started the project I did not have that much knowledge and from the course I know that Linear Regression and DecisionTreeClassifier are suitable for predictions, but when I researched further I found out that LSTM is the most common algorithm for stock price predictions for past data.

My plan before starting the project was to predict future prices, i.e. whether they will rise or fall. During the project, it turned out that this plan is difficult to realize as it was beyond my knowledge and understanding. I had to feed the algorithm with more input and independent variables, but unfortunately it was more complicated than I thought. Apart from the fact that my acvhive applies the

algorithms successfully and the algorithm runs successfully, I think I achieved this with simple inputs and a straightforward general structure. The workflow of the project includes crucial steps, starting with data collection and preprocessing. The variables from the charts are useful factors for us to examine the data and proceed accordingly. As I think they are important, I wanted to show them, for example as a correlation chart. Using the open, high, low and volume data as characteristics and the closing prices as targets, the data is prepared for analysis. Machine learning models selected for evaluation include Decision..

In summary, using historical Apple stock prices for prediction was the beginning of the project. While trying to find the best way to implement the project, I created four algorithms and the easiest and most successful was the LSTM model. I learned every coma, step, and function from scratch, I had to study many projects since this is my first Python project. Other take aways and things I learned were getting data from YahooFinance, preprocessing steps, cleaning data, checking if there are empty columns (data) etc. It may seem out of context, but I also want to mention that I learned using Anaconda and adding new libraries of Anaconda Prompt and Anaconda environments. the part I want to say; I was 0 in this project but luckily I learned things for Machine Learning and Python, I am really happy to work this kind of project. Although this project was challenging for me at times as mentioned above it was my first Phyton project I have learned a lot in terms of machine learning and Python and realized that working on these kinds of projects arouses my interest.

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