ALEX ADEYEYE

[adeyeyealex@gmail.com](mailto:adeyeyealex@gmail.com),

[aadeyeye@regis.edu](mailto:aadeyeye@regis.edu)

4439851832

TIME SERIES FORECASTING OF FINANCIAL MARKET USING MACHINE LEARNING

The project will look at the different stock prices based upon the trend in the market for the 10 years to determine or make an accurate prediction of what the prices of stocks will look like in the foreseeable future. What we mean here is that the historical data will be used as a training set, the behavior will be learned over several iterations which will in turn be used to predict the future outcome. Dataset will be collected from yahoo finance website for the US stock exchange for both Apple stock and SP500. The dataset will be cleansed, and then further exploratory analysis will be done on the dataset. The dataset that is collected will be split into trained and test dataset at 80:20 ratio. The trained dataset will be used in predicting what the outcome of the test dataset will look like.

This is going to be a supervised learning project with the aim of looking into historical data to make accurate predictions of the what the stock price will be.

Multi-layer LSTM (Long Short-Term Memory) a Recurrent Neural Network will be used in the project. This is because how the model performs in predicting sequential problems. The advantage of this is that the ability to store long-term dependencies help with some major events that could or could have affected the market.

Random forest will also be used for comparison purposes. The models takes note of various factors that could lead to why some decisions are taken whenever predictions are done.

Mathplotlib and Seabon will be used for visualization purposes which will show the trend of the market over-time. We could also make comparison of the actual market trend and the forecast of what the market will look like.

The data will be collected from the yahoo finance website and the dataset will be back-dated to march, 2013. This is necessary so that there could be more historical data to look at.

Some of the difficulties that I see in this project is the question of how accurate will the result be? Could this make a correct prediction or forecast of the coming trend. LSTM is based on Recurrent Neural Network but what are some different factors that could affect the recurrence of the trend that we are hoping will happen?

The project should be done in approximately 4 weeks.

1. The dataset will collection and preprocessing will be done.
2. Exploratory analysis on the dataset.
3. Training of the models.
4. Time series predictive on the test dataset.