

Department of Information Science and Engineering



Abstract: Team V

Stock Market Prediction

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Document History

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0.1			Nokia UC	-	-	-

Abstract

In Stock Market Prediction, the aim is to predict the future value of the financial stocks of a company. The recent trend in stock market prediction technologies is the use of machine learning which makes predictions based on the values of current stock market indices by training on their previous values. Machine learning itself employs different models to make prediction easier and authentic.

Investment firms, hedge funds and even individuals have been using financial models to better understand market behavior and make profitable investments and trades. A wealth of information is available in the form of historical stock prices and company performance data, suitable for machine learning algorithms to process.

This project seeks to utilize Deep Learning models, Long-Short Term Memory (LSTM) Neural Network algorithm, to predict stock prices. For data with time frames recurrent neural networks (RNNs) come in handy but recent research has shown that LSTM networks are the most popular and useful variants of RNNs.

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Section 1

Problem statement

The challenge of this project is to accurately predict the future closing value of a given stock across a given period of time in the future. In the past few years we've seen lots of academic papers published using neural nets to predict stock prices with varying degrees of success but Until recently the ability to build these models has been restricted to academics. Now with libraries like tensor flow anyone can build powerful predictive models trained on massive datasets. For this project we will use a [Long Short Term Memory networks](#) – usually just called “LSTMs” to predict the closing price of the [S&P 500](#) using a dataset of past prices

Brief solution

For this project, the best possible solution is to utilize a LSTM Neural Net model capable of learning from time series data. This project will be programmed in a Jupyter Notebook (iPython) for ease of reproducibility. Using a Keras implementation of the TensorFlow library, the solution will utilize a LSTM Neural Net model and will be supported by Pandas DataFrame library for convenient time series data schema. The measures of performance will be based on the predicted stock ticker price in comparison to both the actual price and the benchmark model's predicted price.

Block diagram/Flow chart

<<Stem sentence >> The diagrammatic representation for project is as follows:

Components used

Software Components

- Python 3.10
- Jupyter Notebook 6.4.11
- NumPy
- Pandas
- Keras
- Tensor Flow

Construction steps/Working procedure

Output/Result

<<Describe the output/result>>

Conclusion

Section 2

Innovation

This project seeks to utilize Deep Learning models, Long-Short Term Memory (LSTM) Neural Network algorithm, to predict stock prices. For data with time frames recurrent neural networks (RNNs) come in handy but recent research has shown that LSTM networks are the most popular and useful variants of RNNs.

Future Enhancements

Open points

Publications: White paper, IEEE, IPR

Project plan

Sl.No.	Project Milestone	Status	Proposed completion date	Actual completion date	Remarks
1	Problem Statement final	Done			
2	Abstract readiness	Done			
3	Hardware List submission	Not Required			
4	Project Report updates				