**The University of Sheffield**

**Stock Market Prediction using Machine Learning**

**Logo

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**Declaration**

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**Abstract**

This dissertation aims to discover the accurate value of a stock price of a company in the future using machine learning algorithms. The entire idea of predicting the future value of a stock price is to gain significant profits.

This project uses a combination of multiple strategies such as Simple Moving Averages (SMA), Bollinger Bands, Exponential Moving Averages (EMA), Relative Strength Index (RSI), Stochastic Oscillator, Moving Average Convergence Divergence (MACD), Machine Learning Techniques such as Long Short-Term Memory (LSTM) and Deep Neural Network to intelligently predict the stock direction then buys and sells stocks automatically. The algorithm aims to make the best profit possible to the trading account on which it runs on.

The Project has been implemented on Amazon Web Service in a EC2 cloud system. Python scripts has been used to predict, buy and sell stocks. Oanda’s API is used to connect the python to the stock trading platform.

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**Introduction**

* 1. **Background of the project**

Though investing the money in stock market is a good thing, there are numerous numbers of risks associated with it. There is no guarantee that the stock of the company that has been purchased will rise and make a fortune for the person who bought it. As the stock fluctuate a lot, there is a higher chance that the money invested on a stock might go in loss if not monitored on regular intervals. To solve this problem, developing a bot which uses Machine Learning algorithms and complex strategies to predict the direction of the stock even in the absence of a person, will help.

It is possible for a person to buy stocks on multiple companies, but monitoring all the stock trends they purchased simultaneously, will reduce the efficiency of human prediction, and might turn into a disaster. But a computer can handle millions of tasks at the same time. It’s not a big of a deal for a computer to monitor every single company’s stock in the stock market. So the goal of the project is to automate the entire process of buying and selling stocks by making a Bot that is equipped with advanced algorithms that helps to predict the future of the stocks, thereby reducing the loss and making profits.

* 1. **Aims and Objectives**