University Institute of Engineering, Chandigarh University
Department of Computer Science & Engineering
Phase I (Project Scope, Planning and Task Definition)

Date:

Project Title

Stock Prices Prediction Using ML

Project Team

Team Designation	Name	UID	Section
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Project Scope

Stock market prediction aims to determine the future movement of the stock value of a financial exchange. The accurate prediction of share price movement will lead to more profit investors can make. Predicting how the stock market will move is one of the most challenging issues due to many factors that involved in the stock prediction, such as interest rates, politics, and economic growth that make the stock market volatile and very hard to predict accurately. The prediction of shares offers huge chances for profit and is a major motivation for research in this area; knowledge of stock movements by a fraction of a second can lead to high profits.

Project Planning and Task Definition

The prediction methods can be roughly divided into two categories, statistical methods and artificial intelligence methods. Statistical methods include logistic regression model etc.
Artificial intelligence methods include multi-layer perceptron, convolutional neural network, naive Bayes network, back propagation network, single-layer LSTM, support vector machine, recurrent neural network, etc. They used Long short-term memory network (LSTM). Long short-term memory network: Long short-term memory network (LSTM) is a particular form of recurrent neural network (RNN).

Implementation Steps

Step1: Raw Stock Price Dataset: Day-wise past stock prices of selected companies are collected from the BSE (Bombay Stock Exchange) official website.

Step2: Pre-processing: This step will incorporates the following:
a) Data discretization: Part of data reduction but with particular importance, especially for numerical data
b) Data transformation: Normalization.
c) Data cleaning: Fill in missing values.
d) Data integration: Integration of data files. After the dataset is transformed into a clean dataset, the dataset will be divided into training and testing sets so as to evaluate.

Step3: Feature Selection: In this step, data attributes will be chosen that will going to be fed to the neural network. In this study Date & Close Price are chosen as selected features.

Step 4: Train the NN model: The NN model is trained by feeding the training dataset. The model is initiated using random weights and biases. Proposed LSTM model consists of a sequential input layer followed by 3 LSTM layers and then a dense layer with activation. The output layer again consists of a dense layer with a linear activation function.
Step5: Output Generation: The RNN generated output will be compared with the target values and error difference is calculated. The Back propagation algorithm will be used to minimize the error difference by adjusting the biases and weights of the neural network.

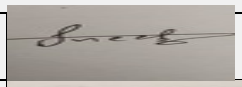
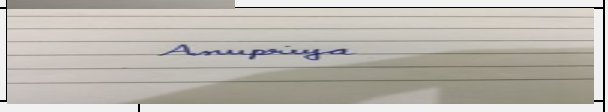
Step 6: Test Dataset Update: Step 2 will be repeated for the test data set.

Step 7: Error and companies' net growth calculation: By calculating deviation we will check the percentage of error of our prediction with respect to actual price.

Step 8: Visualization: Using Keras[21] and their function APIs the prediction is visualized.

Step 9: Investigate different time interval: We will repeat this process to predict the price at different time intervals. For our case, we took 2-month dataset as training to predict 3-month, 6-month, 1 year & 3 years of close price of the share. In this different time span, we will calculate the percentage of error in the future prediction. This would be different for different sectors. So, this will help to find a frame for the particular sector to predict future companies' net growth.

Project ID (If selected from project basket)										
Project Outcome (Tick the Column)	**Patent**		**Journal Paper**		**S/W Project**	✓	**H/W + S/W Project**		**Other**	
Remark of Supervisor										

Name of Supervisor	**Puneet Prasad Singh**	**Signature**	
Name Of Co-Supervisor	**Anupriya**	**Signature**	

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