STOCK PRICE PREDICTION

INTRODUCTION

The stock market is a complex and dynamic system that is influenced by many factors such as economic indicators, company news, geopolitical events, and investor sentiment. It is a challenge for investors and traders to predict the future prices of stocks, which is important for making investment decisions. Machine Learning (ML) has shown great potential in stock market prediction by analyzing historical data to identify patterns and trends. In this project report, we will discuss the application of the LSTM (Long Short-Term Memory) model in predicting stock prices.

IMPLEMENTATION

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 the dataset.

Step3: Feature Selection: In this step, data attributes are chosen that are 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 is compared with the target values and error difference is calculated. The Backpropagation algorithm is used to minimize the error difference by adjusting the biases and weights of the neural network.

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

Step 7: Error and companies' net growth calculation: By calculating deviation we 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 intervals: We repeated this process to predict the price at different time intervals. For our case, we took a 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 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.