MACHINE LEARNING

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.

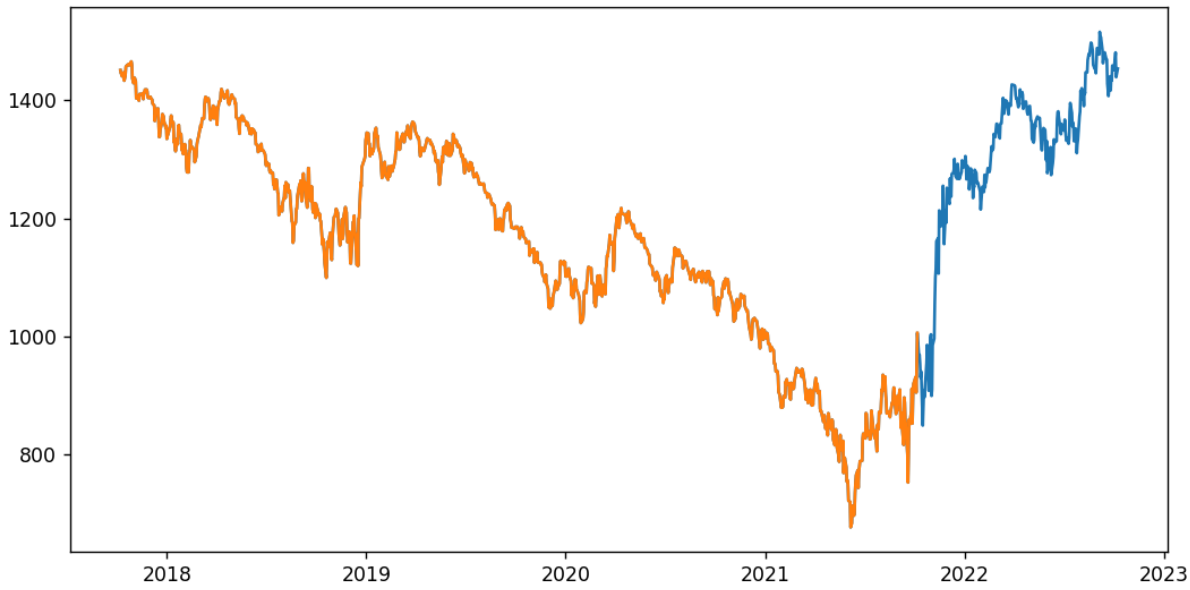
Step5: Output Generation: The RNN generated output is compared with the target values and error difference is calculated. The Backpropagation algorithm is used to minimize the error difference by adjusting the biases and weights of the neural network.

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 MATLAB and their function APIs the prediction is visualized.

Orange:Training set Blue: Predicted Stock Price



Blue:Original dataset Orange:Predicted dataset