INTRODUCTION

Problem Statement:
ML04
Forecasting stock market prices have always been a challenging task for many business analyst and researchers. Your friend, who is interested in investing in the stock market shares of the well-known company IBM is unable to predict the company's stock market. The rate of his investment and his business opportunities in IBM's Stockmarket can increase if an efficient algorithm could be devised to predict the short term price of an individual stock.

Objectives:
The link below contains a dataset, where the TIME_SERIES_DAILY_ADJUSTED give the stock market's close value of every day with a date. Your task is to devise a model to predict the 'adjusted close' value of the next day given the stocks of all days until the current day, and developer a front-end UI (either Web app or Mobile app) that can help your friend invest the right amount of money.

PROPOSED METHOD

Our method involves using a Recurrent Neural Network(RNN), in particular it uses LSTMs(Long Short Term Memory). The architecture is as follows:

1. 5 LSTM layers with 50 units
2. Dropout Layer following each LSTM layer with a dropout rate of 0.2
3. A dense output layer containing one neuron.

We implement the ‘RMSProp’ optimizer with ‘Mean Squared Error’ as the loss function. We run the training algorithm for 35 epochs with a batch size of 32.

We also use the MinMaxScaler to standardize the dataset between 0 and 1.

The model looks at a rolling window of size 60, this implies stock prices for the previous 60 days are considered for the forecasted next-day’s stock price.

WORK DONE/ RESULTS

After training our model for 35 epochs, we got an average loss of 0.0015, which is rather impressive considering the size of the dataset. We observed that the loss increased for the smaller datasets and was low for large ones such as IBM.

We use StreamLit to portray our results as a webpage, which displays the stock prices for the previous 5 days and the forecasted value.

CHALLENGES FACED

We found it a challenging task to integrate our model into a front-end framework (as a web-app). It was also our first time doing this, and hence we ran into multiple errors, and had to check out different types of methods to finish this.

CONCLUSION

Overall, it is of our opinion that the model performs well and is presented in an appropriate way using our Front-End framework. We thank the organizers for this tremendous opportunity, as we learnt a lot in a short period of time.