**HS302 Project**

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**Prediction:**

Stock Chosen: Berkshire Hathaway Inc. Class A

Ticker Symbol: *BRK-A*

Predicted Closing Value on March 31, 2023 (in USD): *457769.62*

**Prediction Model Used:**

We use the *LSTM* (Long Short-Term Memory) model, which is a popular deep-learning model in the domain of stock price prediction. It is capable of learning long-term dependencies in sequence prediction problems and it can learn patterns in the data that may not be apparent to human analysts.

**Dataset:**

Historical prices of BRK-A from *Yahoo Finance* (imported as a finance Python library) for the period of March 30, 2022 - March 30, 2023

<https://finance.yahoo.com/quote/BRK-A/history/>

**Notes:**

* The LSTM model consists of two layers of LSTM units and a single dense layer(the architecture commonly used). The code is a simple example of using LSTM for time series forecasting.
* The model is trained using the Adam optimizer and root mean squared error (RMSE) loss.
* The data is split into training and testing datasets using the time\_steps variable.
* The time\_steps is set to 30, which means that the LSTM model will take the previous 30 closing prices as input to predict the next price, iterating over the dataset in a sliding window manner.
* After compilation, we fit the model on the training data for 100 epochs.
* Then, we make predictions on the test data and calculate the root mean squared error between predicted and actual values.
* We can play around with the hyperparameters to get a prediction model which is optimal for the given dataset.
* The trained model is used to predict the stock price on the day after the last date in the training dataset (31 March, 2023).

**Code Link:**

[Google Colab]: <https://colab.research.google.com/drive/1LvlMxa9dprAf0i6EUC3bbRxq1pwkm8CI>