



# Indian Institute of Information and Technology Vadodara (Gandhinagar Campus)

## Design Project Report - 2021

on

### Stock Market Forecasting

Submitted by

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**Abstract**—In this project, the stock ticker is given as an input by the user and then the data is downloaded using yfinance python library. After the data is downloaded, Machine Learning model is used to predict the future stock price.

### I. INTRODUCTION

One of the best returns on the market may be found with stock investments. Although they are volatile in nature, share prices and other statistical indicators may be visualised, which aids keen investors in carefully selecting the company they wish to put their profits in. One of the best returns on the market may be found with stock investments. Although they are volatile in nature, share prices and other statistical indicators may be visualised, which aids savvy investors in carefully selecting the company they wish to put their profits in. Using the tabular data provided by the yfinance python module, we can create dynamic charts of the financial data of a particular company. We then implement a machine learning algorithm that is used to forecast future stock prices.

### II. GOALS AND OBJECTIVES

The main goal of our project was to create a website where the user gives a stock ticker as an input and get a future prediction made for that stock ticker.

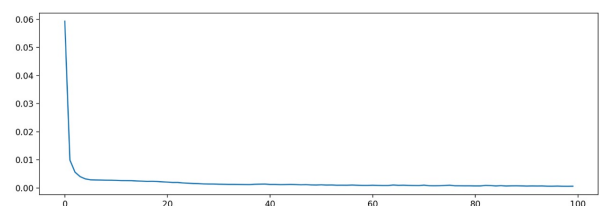
### III. METHODOLOGY

In this model, we download the 5 years data for the stock ticker that is given as an input by the user. We then use the previous 100 data data as a sliding window to make a prediction for the next 30 days.

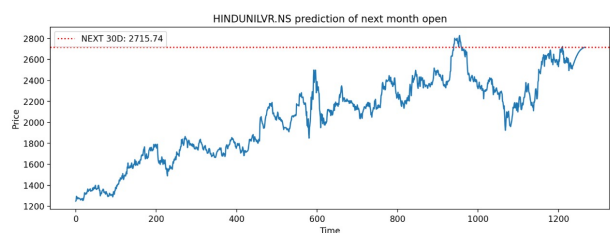
For the Machine Learning part, the data is split into 2 parts: the training and the testing part. The training part comprises of 70% of the data and the rest is used for the testing purposes. The downloaded data is then normalised using the MinMaxScaler. Using Tensorflow, we import LSTM (Long Short Term Memory). LSTM is a variety of recurrent neural networks (RNNs) that are capable of learning long-term dependencies, especially in sequence prediction problems. We use Keras models to import Sequential. Keras is a neural network Application Programming Interface (API) for Python that is tightly integrated with TensorFlow, which is used to build machine

learning models. Sequential is used to create models layer-by-layer. The error factor considered here is the Mean Squared Error and the optimiser used is Adam. After the machine learning part is completed the data is inverted transformed back to the original data i.e, the normalised data is converted back to its original form for the plotting purposes. The graphs is then plotted using the Matplotlib python library and the interactive graphs are plotted using the poorly python library. The accuracy of this model is nearly perfect in an ideal world as after every epoch the error factor decreases. However, various external factors the world presents can affect the prediction of this model.

For better accuracy, the hyper parameters of the model can be adjusted such as the number of days taken in the sliding window. We can even change the number of future days predicted from 1 month (30 Days) to any number of days as per our requirement.



Elbow Graph that shows error factor decreasing after every epoch. (Here we used 100 epochs)



30 days prediction made for Hindustan Unilever.

#### IV. RESULTS AND DISCUSSIONS

The final model can make prediction for the upcoming 30 days. This helps investors to buy and sell company shares to book their maximum profits.

#### REFERENCES

1. Fabian Baradel, 'Introduction to Deep Learning with Tensorflow'.
2. National Stock Exchange of Indian Limited, 'Handbook on Basics of Financial Markets'.
3. Eric Matthes, 'Python Crash Course, A hands-on project based introduction to programming'.