CHAPTER 1
INTRODUCTION

1.1. Background

Prediction of stock price movements in the future will be an area that is widely studied. Although there is a hypothesis that it is believed to be impossible in predicting stock prices, there are also ways that show if formulated and modeled correctly, it will get a fairly high level of accuracy in stock price predictions. This is because stock trading is one of the main investment activities. Based on current financial information, modeling and predicting future stock prices is very useful for investors. They want to know whether a stock will go up or down in the short or long term.

One solution to overcome problems in stock price prediction for investors is to make machine learning by comparing the error value of one algorithm with another algorithm. The method used in predicting accuracy is calculating the value of Mean Absolute Error, Root Mean Squared Error, and Mean Absolute Percentage Error. Therefore, based on the calculated value, an algorithm that produces the lowest error value can be found.

The author wants to analyze the comparison of accuracy using Linear Regression algorithm, Lasso Regression algorithm, LSSVM algorithm, LSTM, and CNN to predict stock prices. The author wants to know which algorithm will get higher and more accurate accuracy. This can be used by investors in predicting stock prices using a more accurate algorithm.

1.2. Problem Formulation

In particular, this study will examine two main research questions :

1. How does machine-learning work in forecasting?

2. Whether the Linear Regression algorithm, Lasso Regression algorithm, LSSVM algorithm, LSTM, and CNN are able to improve the prediction of stock prices movements?

1.3. Scope

This research will use python as the programming language and use several libraries such as scikit learn and keras to will also be used to create algorithms. The dataset used is collected from yahoo finance from Jan 1st, 2017 to Jan 1st, 2022 daily that is obtained from Bank of America Corporation (BAC), HDFC Bank Limited (HDB), Royal Bank of Canada

(RY). To make a variation training set, the author used a ratio dataset and compared it between algorithms. The models will evaluate with MAE, RMSE, and MAPE.

1.4.   Objective

The main goal from this research is to analyze the accuracy of the comparison using Linear Regression algorithm, Lasso Regression algorithm, LSSVM algorithm, LSTM, and CNN to predict stock prices. This research outcome would make machine-learning models and deep-learning models to help investors to predict future stock prices.