# Chapter 1

Introduction

The stock market is characterized by its erratic and dynamic nature, where prices may change promptly due to a range of factors, including geopolitical events, economic indicators, and corporate performance. Accurately forecasting stock prices poses a challenge for investors, traders, and financial analysts. Machine learning algorithms have become increasingly popular to predict stock prices because of their capability to analyze vast amounts of data and detect intricate patterns in the given datasets.

The analysis of sequential data using a neural network architecture involves the usage of Recurrent Neural Networks (RNN). The classification of RNN that has gained popularity in stock market prediction owing to its ability to detect long-term dependencies in sequential data is LSTM. In stock market prediction, LSTM models are trained on historical stock prices and related features to learn the patterns in the data. These patterns were then used to predict future stock prices. The LSTM model has a memory unit that can remember important information for a longer period of time, allowing it to capture long-term trends and patterns in stock market data. LSTM models have shown promising results in previous studies and are widely used in the financial industry for stock market prediction.

The dataset used in this study is the historical stock price data of a selected company, including features like closing price,high price,opening price, low price and volumes. The dataset was preprocessed by normalizing the values and splitting them into testing and training sets.

The training set was used to train the LSTM and GRU models, while the testing set was used to evaluate them. These models are categories of Recurrent Neural Networks (RNN). They posses the ability to capture long-term dependencies in sequential data. The LSTM model has memory units that can retain significant information for a longer period of time. The GRU model has lesser parameters in comparison to the LSTM model, making it faster to train and execute.