Project Overview

This project aims to analyze historical stocks prices and predict future trends for a selected stock (in this case it was Apple Inc,. – AAPL).

The analysis involves data collection, data cleaning, exploratory data analysis (EDA), model building using time series, forecasting and deploying the model in a Shiny app for interactive prediction.

Project Setup

What are the required libraries and why are these libraries?

Quantmod: Ideal for quantitative financial modeling and easy retrieval of financial data.

Prophet: A tool used for time series forecasting, developed by Facebook, which handles seasonality well and is easy to use. Make it the best option for use for time series analysis.

Ggplot2L The go to package for creating visual plots and graphics in R.

Shiny: Allow for the creation of interactive web applications directly for R, making the deployment and sharing of models straightforward.

Data Collection:

Why ‘quantmod’?

‘quantmod’ simplifies the process of downloading and managing financial data, which is essential for stock price analysis

We use the quantmod package to fetch historical stock prices for Apple Inc. From Yahoo Finance

Exploratory Data analysis (EDA)

Why EDA? EDA helps in understanding the underlying patterns trends and anomalies in the data. It provides valuable insights that guide the model-building process and ensure that the data behaves as expected. Visualize stock price trends using ggplot2 and calculate plot moving averages.

Model building

Why ‘prophet’?

Prophet is designed for business forecasting and handles outliers, missing data, and trend changes effectively. Its simplicity and flexibility make it ideal for time series forecasting.

Model Evaluation

Why Model Evaluation? Evaluating the model ensures its accuracy and reliability. By comparing predicted values with actual values, we can assess how well the model performs and make necessary adjustments.

We shall visualize the forecast. Then we shall compare the forecast with the actual values to see the accuracy and reliability.

Shiny allows for the creation of interactive web applications directly from R. This makes it easy to deploy the model and provide an interactive interface for usrs to visualize and make predictions.

This project demonstrates a comprehensive approach to financial market analysis and stock price prediction using R. The choice of tools and packages was driven by their effectiveness and ease of use in handling financial data, performing time series forecasting, and creating interactive applications. The process involves data collection, cleaning, exploratory analysis, model building, evaluation, and deployment. The Shiny app provides an interactive way to visualize and predict stock prices, making it a valuable tool for investors and analysts.