

USER MANUAL

A python-based interface to analyse the real-time performance of 5000 company securities listed on NASDAQ. An extensive set of modules based on Pandas and NumPy libraries.

Nowadays having analytical software is highly crucial in any organization to gain faster insight from the information and make business-defining decisions. We have developed this application for advanced Business Analysts who will be analysing stock data and come up with a conclusion to advise businesses on how they can best invest their money.

The application focuses on two important factors, descriptive and predictive analysis which is carried forward with the help of historical data available from online sources. Descriptive Analytics covers statistical information of the trading price for any specific company the user selects. Predictive Analytics is performed by specifying a date to forecast the closing price for the given company.

Below is a list of steps which will guide the user to operate the application:

1. There are 3 Python files; “home_page.py”, “descriptive_analysis.py”, “predictive_analytics”. Download the above-mentioned files for executing Stock Market analysis, along with the “UML_Diagram.png” and “user_manual.docx”. Execute the “home_page.py” file.
2. It is important to import certain Python Packages for successful execution of the code. Below is a list of those packages: -
 - For reading data from web: pandas_datareader,
 - For data processing: pandas, numpy
 - For downloading file using URL: requests
 - For date and time: date, datetime, dateutil, timedelta
 - For ignoring warnings: warnings
 - For reading files and file directory: os
 - For graphs: matplotlib, pylab, seaborn,
 - For statistical analysis: scipy
 - For candlestick chart: candlestick_ohlc
 - For linear regression models: metrics, linear_model, LinearRegression, LinearSVR
3. The user enters the company ticker name
 - Validate the Ticker. If the ticker is valid continue with Step 2 else go back to Step 1.
 - User also gets an option to view the User Manual and UML diagram.
 - User is also given a choice to abort the application.
4. The user enters the start and end date in YYYY-MM-DD format.
 - Validate the date format. If date format is valid continue with Step 3 else go back to Step 2.
5. The user gets an option to choose from the below analytics techniques.
 - Descriptive Analytics
 - Predictive Analytics
 - Comparison of Stocks

6. If the user selects descriptive analytics, the statistical information and graphical visualization of the company are displayed.
 - The user gets an option to choose anyone from the opening price, closing price, adjacent closing price, high price, low price and volume to calculate the Standard Deviation, Mean, Quartile Range, Maximum and Minimum Value, Co-Efficient of Variation, Skewness and Kurtosis.
 - The user gets an option to visualize the data using Time Series, Moving Averages and Rolling Standard Deviation, Exponential Weighted Moving Average, Weighted Moving Average, MACD and Histogram, Risk Analysis, Trendline, and Candlestick.
 - i. Upon “Time Series” selection, the user gets to choose from the Closing Price and Volume to visualize the time series.
 - ii. Upon “Moving Averages and Rolling Standard Deviation” selection, the user enters the window size to visualize the moving averages and rolling standard deviation.
 - iii. Upon “Exponential Weighted Moving Average” selection, the user enters the window size to visualize the exponential weighted moving average.
 - iv. Upon “MACD and Histogram” selection, the user gets to visualize directly the MACD and Histogram.
 - v. Upon “Risk Analysis” selection, the user gets an option to select from daily returns of stock as well as average daily return using the histogram to analyse the risk.
 - vi. Upon “Trendline” selection, the user gets to visualize the trendline graph.
 - vii. Upon “Candlestick” selection, the user gets to visualize the candlestick graph.
7. If User selects predictive analytics, the prediction of the company’s stock prices is carried forward using two models: 1) Linear Regression & 2) Linear SVR
8. The user gets an option to select the model and enters the date for the prediction to be made.
9. With the given date, the prediction is made with the help of a graph and the information of Accuracy, MAE, MSE, RMSE, R^2 score, slope and intercept are displayed along with the closing price for the given date in case of Linear Regression Model. For the Linear SVR model, the user gets the predicted closing price as per the data entered.