**Financial Data Analysis using Visualisation Techniques**

**1. INTRODUCTION**

The project aims to provide an innovative solution for financial data analysis that will help businesses streamline their financial reporting and decision-making processes. By leveraging the power of visualisation techniques, this project will enable organisations to gain a deeper understanding of their financial data, which will ultimately lead to improved financial performance and greater success.

**2. DATA DESCRIPTION/SOURCE**

For this proposed project, we will be utilising the YahooFinance Python API to collect financial data. This API provides easy access to a wealth of financial data from Yahoo Finance, including real-time stock prices, historical price data, financial statements, and market news.

**2.1 DATA PREPROCESSING**

The preprocessing stage is a crucial component of the project, as it sets the foundation for the subsequent analysis and modelling stages. Standardisation, Normalisation and Handling NULL values will be the key steps to maintain the accuracy and completeness of data.

**3. VISUAL ANALYTICS SYSTEM**

The overall system we will be designing for this project will be a **standalone** system. This means that it will be designed to operate independently without relying on external systems or infrastructure.

**4. VISUALISATION TASKS(TENTATIVE)**

* Correlation Analysis Of Stocks with Pair plots and Joint plots - We will use pair plots and joint plots to perform correlation analysis of stocks. These visualisations will help us to identify the degree and direction of the relationship between different stocks. [*KAJAL SETHI]*
* Calculate the Average Sensex hike - The average Sensex hike is an important indicator of the overall performance of the Indian stock market and can provide insights into the state of the economy and investor sentiment. As the average Sensex hike signifies Market sentiment, Economic growth, Investment opportunities, Impact on individual stocks. [*KAJAL SETHI]*
* Calculate the long/short-term stocks based on variability - We will use statistical techniques to calculate the long/short-term stocks based on variability. This will help us to identify stocks that are likely to perform well over a longer period. *[PRASHANT MISHRA]*
* Find the x(variable) number of minimum and maximum selling stocks based on volume and plot their graphs - We will find the x number of minimum and maximum selling stocks based on volume and plot their graphs. This will help us to identify stocks that are in high demand and likely to perform well. *[PRASHANT MISHRA]*
* Day-to-day change and Trend Analysis percentage change(Daily returns), moving average - percentage change in an asset's price from one trading day to the next. It is a measure of the asset's volatility and can be used to evaluate the risk associated with an investment.*[PRASHANT MISHRA]*
* Technical Analysis - Technical analysis is a method of analysing financial markets by examining historical price and volume data to identify patterns and trends that can be used to make trading decisions. Technical analysts believe that all relevant information about a stock or market is already reflected in its price and volume movements. Therefore, by studying these movements, they can identify patterns and trends that may signal future price movements and make profitable trades. *[ASHUTOSH PATEL]*
* Seasonal Regression - This technique uses regression analysis to identify the relationship between a stock's performance and various seasonal factors, such as the time of year, holidays, or weather patterns. By analysing the regression coefficients, you can determine which factors significantly impact the stock's performance during certain times of the year. *[ASHUTOSH PATEL]*
* Risk Analysis using Volatility Charts, Candlestick charts - We will use volatility charts and candlestick charts to perform risk analysis and identify potential risks associated with different stocks. *[PRANSHU SAHIJWANI]*
* Estimating Value at Risk Using Monte Carlo Simulation - Value at Risk (VaR) is a statistical measure used to estimate the potential loss that could occur in a financial investment or portfolio over a given time horizon, at a given level of confidence. Monte Carlo Simulation is a computational technique that involves generating random samples to simulate potential outcomes in a system. Monte Carlo Simulation is a powerful tool for estimating VaR because it can capture the complex interactions and dependencies that exist within a portfolio. It also allows for the incorporation of various risk factors and can provide more accurate estimates than simpler, analytical approaches. *[PRANSHU SAHIJWANI]*

Data cleaning and processing - *[ASHUTOSH PATEL]*

Github - *[PRANSHU SAHIJWANI]*

Report - [*ASHUTOSH PATEL, KAJAL SETHI, PRANSHU SAHIJWANI, PRASHANT MISHRA]*