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| STOCK ANALYZER |
| August 29th, 2024 |

# Overview

## Project background and description

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| * **Financial analysis software is too complicated for the common people.** * **Inaccessibility of such software, and hidden behind hefty paywalls** |

## Project scope

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| **To make financial technical analysis more accessible to common ppl, specifically the younger generation.** |

## Requirements

The new system must include the following:

* Pandas and NumPy for exploratory Data analysis
* Plotly express for interactive data visualization.
* Llama-index for Retrieval Augmented Generation
* Stream-lit for web-app development.
* Google Gemini as an LLM wrapper
* Yahoo! Finance for historical stock data.
* National Stock Exchange API for company profile scraping.
* Trading View API for market sentiment analysis.

## User Experience

The front end contains a simple, material UI which takes in a user input, i.e., Listed companies, in the Indian stock market and gives insight on the current market along with comparison to past market data. It plots all the relevant, calculated values in simple, and interactive graphs. Thus, also predicting which market to invest in, in turn it also gives the user insights on the current given graphs if the user raises any queries. It can also analyze the given data to suggest whether to invest on the current company or not based on their recent and current performance portfolios.

## Affected business processes or systems

The given technology heavily affects the stock market industry. If used correctly it can bring in a new flow of traders and brokers. Thus, creating more market movement and cash-flow.

## Specific exclusions from scope

* The UI was excluded/ replaced with a plane outlook for simplicity and to have more work done on the backend.
* Debt to equity risk assessment level indicator removed in order to lessen the screen clutter.
* Volume Weighted Moving Average, as it didn’t provide any relevance to the aim of the current project

## Implementation plan

Combination of multiple prebuilt technical analysis indictors are used in backend, which pulls in company financial data and use sophisticated prompt engineering and generative AI to give a rank or score after thorough analysis. Usage of **LLM** (Large Language Models) to parse the given data into simplified consumer-friendly information. The programme also uses **NLP** (Natural Language Processing) to analyse market sentiment to adjust the given data. It scrapes public data from NATIONAL STOCK ECHANGE and parse it to structured database. This data is used in order to calculate **PE** (Profit to Expense) **Ratio**, **Debt to Equity ratio**, **Earnings per share** in the backend.

## High-level timeline/schedule

If given enough time and resources we can improve this program to a point, where it can predict and give insights with more accuracy and speed, or even scale towards multiple company analysis at the same time.