

# Project Topic: Stock Recommender System

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## Team Members

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Team captain marked in **BOLD**.

## Background

In the year 2020, there has been huge surge in securities trading, driven by retail investors. The increase in the trading activity can be attributed primarily to the easy-to-use mobile based trading apps, offered by several FinTech companies such as eToro, Robinhood and InteractiveBrokers etc. The retail investor of today might lack time for in-depth research and/or even lack the necessary knowledge to analyze the financial standing of a company. In such a situation, many of the retail investors either rely on word of mouth or blindly following other investors on such trading platforms. This leads to investment decisions beyond the risk profile and/or risk appetite of the investors.

## Proposal

We would like to propose a solution "Stock recommender system" to enable retail investors easy access to information, relevant for informed investment decisions. Based on user's preference of a stock, the stock recommender proposes a cumulated rating for the stock and also proposes other stocks with similar ratings. The recommender system combines

- stock rating data from various market analyst,
- market sentiments and
- company profile

for determination of the cumulated rating and curation of the recommendation list.

## Market research

For the viability of the stock recommender system, we researched features offered by existing tools (freely available tools) such as Yahoo Finance, eToro platform etc. Each of these tools offers all the information, required for decision making, in isolation and relies on the users to combine them for their investment decisions.



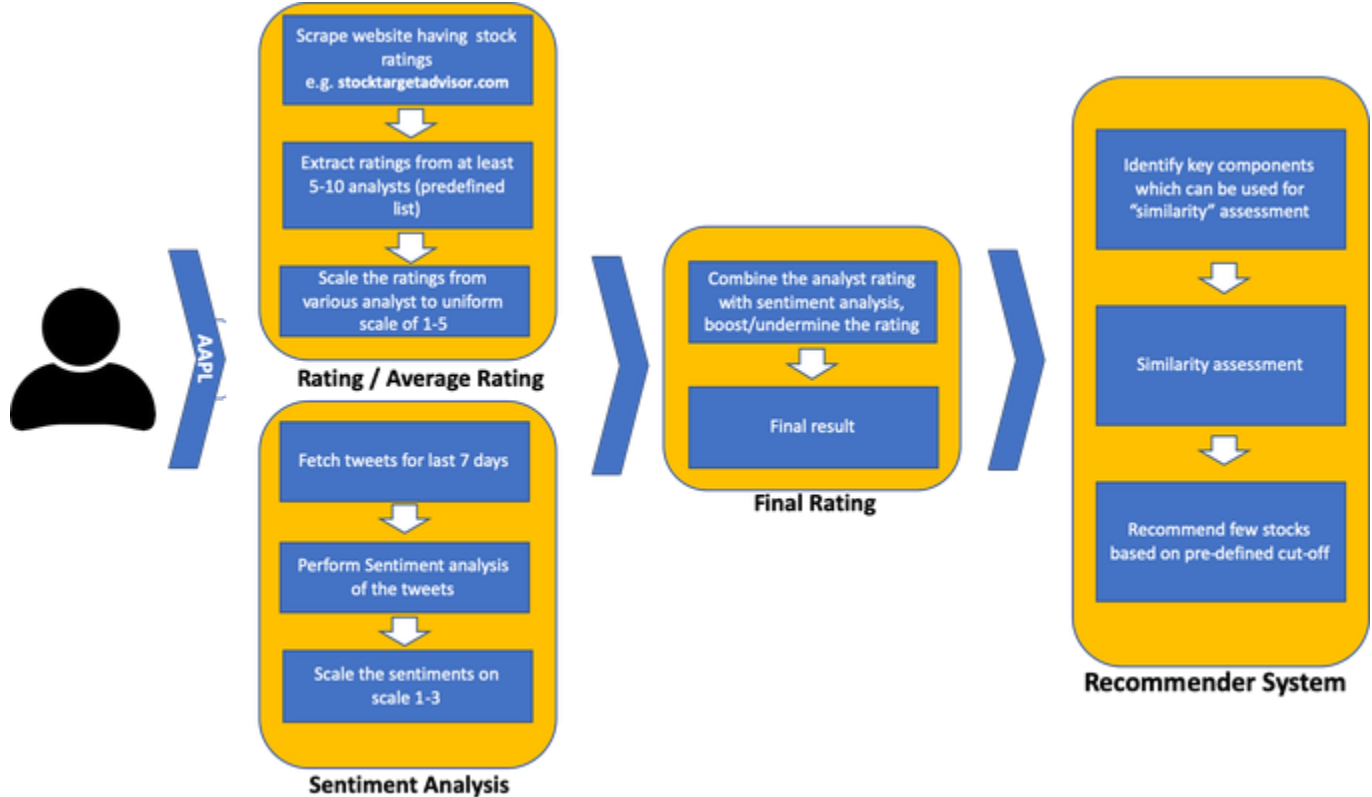
As an example, above screenshots shows a recommender from Yahoo Finance which cumulates ratings from various market analysts but does not include current market sentiments and does not recommend similar stocks.

Based on our analysis, we have not come across any product which provides sentiment weighted cumulated stock rating and recommendation for similar stocks which can be used by retail investors for faster and informed decision making.

## High-level System design

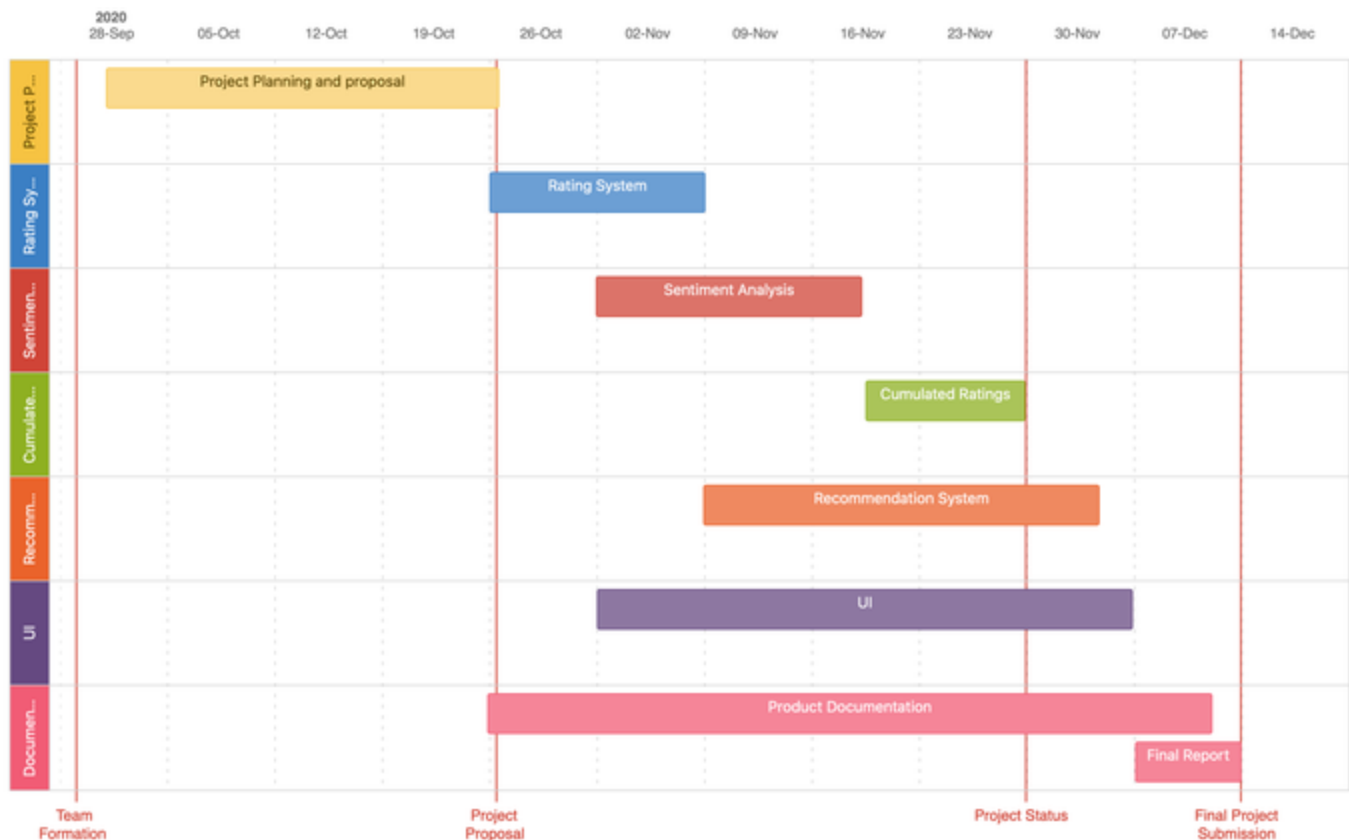
There might be several possible approaches to solve the problem - to allow easy access to information for informed investment decision, we would like to propose following solution design, based on our learnings from the UIUC course "CS 410 - Text Information System". The solution design leverages following aspects of the CS410 course to build the Stock recommender system.

- Scraping of webpages for relevant information and collating the data
- Sentiment analysis based on user texts
- Recommender system based on content similarity



## Project timeline

The implementation of the project is planned in seven phases. First phase is focused on project planning and task distribution. Subsequent four phases are aimed to development of major software components such as Ratings system, Sentiment Analysis etc. The last two phase focuses on UI and documentation which will be executed in parallel to component development.



## FAQs

- **What is the function of the tool?**

The stock recommender system helps customers, who would like to invest in equity market, to identify best value stock for investment based on consolidated rating of various market analyst, who rates the stock after in-depth research, and based on current market sentiment, judged via twitter feeds.

- **Who will benefit from such a tool?**

Retail investors, financial institution etc.

- **Does this kind of tools already exist? If similar tools exist, how is your tool different from them? Would people care about the difference?**

Based on our research, there are various tools in the market offering various features such as cumulated ratings. However, we have not come across any product which provides sentiment weighted average stock ratings and recommendation for similar stocks which can be used by retail investors for faster and informed decision making.

- **What existing resources that we use?**

**Sourcing of Market Analysts ratings by web scraping (e.g. Python Beautiful Soup, etc.):**

Stock Target Advisor <https://www.stocktargetadvisor.com/>

Market Beat <https://www.marketbeat.com/>

**Market Sentiments**

Twitter Feeds

We intend to use the Twitter dev API <https://developer.twitter.com/en> to ingest tweets for related companies to analyze user sentiments. This will help us create a sentiment index to obtain a positive / negative pulse on a given stock ticker symbol (e.g. AAPL) based on public opinion of users interested in a given stock.

- **What techniques/algorithms will you use to develop the tool?**

Refer to Proposal and High-level System design to understand the approach we are planning to use for development of the tool.

- **How will you demonstrate the usefulness of your tool?**

As part of this exercise, we may take feedback from our class about the usefulness of the tool and any improvement recommendation.

- **A very rough timeline to show when you expect to finish what.**

[Refer to Project Timeline for details](#)