Project : **Cryptocurrency Analysis**

Description : Use machine learning, R, Python, and Tableau to analyze and forecast popular cryptocurrencies and to analyze trends within the decentralized finance (DeFi) marketplace.

**Self Assessment :**

There were 4 segments of the Project, the details of which are below :

Selection of topic : I initially selected the topic of cryptocurrency as I was myself interested in learning more about the topic and it was also a very hot topic in news as the cryptocurrency market has been growing at a fast pace.

Segment 1 :

In Segment 1, My role was of managing github. So I made sure that a github repo was created with access to everyone in the team to the repo.

I also kept a check on the repo that as per the requirement everyone had created their respective branches.

We decided to create branches as per the respective role instead of name.

I made sure that everyone created their respective README files, updated with their work for the week.

As I created the main README file, I did all the research on the crypto market and the factors that affect the cryptocurrency market to update the main README file.

I also updated the members of the team, tools that we were planning to use for the project.

Along with that I ensured that everyone’s README notes were merged in the main README file under their respective names.

Also apart from my role, I actively stepped up in organizing group meets over zoom calls. And took the initiative to tell the team members to openly discuss their plans.

Accomplishments & Challenges :

When it comes to the project, what are you most proud of accomplishing this week?

1. Research on the topic by itself and being able to get some useful information.

2. Able to understand the different datasets that are available and being able to understand which dataset makes more sense for the project.

3. Being able to visualize the final picture of how the project should look like as all the pieces of the puzzle come together.

4. Understanding the importance of group coordination and being respectful of the strengths and limitations of the team members.

5. Researching about different ways of solving the problem and learning from it.

6. Trouble shooting while working on the project along with helping team mates when they seem to get stuck.

7. Keeping in mind the timeline for the project while making sure that the project accomplished in the right manner.

8. Understanding the importance of planning for the project as well as being flexible when needed.

9. Creating a road map for all the team mates to follow

10. Being open to suggestions and feedback from all team members irrespective of the accomplishments or failures.

11. Proud of accomplishing the task on time as well as accomplishing it much better than the initial visualization.

Challenge : Teamwork. At times the team members hardly spoke about what they were planning to work on.

Following steps were taken to rise to this challenge.

1. By clear communication, using all the possible channels for communicating the requirements from the team members.

2. Assigning roles to each and every team member for the project.

3. Checking with the team members about the task that are incomplete.

4. Making sure that the work aligns with the requirements of the project.

5. After submission, appreciating the team members for their hard work.

6. Also asking for feedback or suggestions from the team members to ensure that the next phase of the project is completed with ease and enthusiasm.

Segment 2

In Segment 2, my role was Circle, of handling database.

Role :

1. Took over from where the previous database guy had left. Created more csv files from Kaggle dataset and uploaded them to the MongoDB database.
2. Ensured that the team members had the right connection for the mongoDB database
3. Fetched data from the web using API keys for fetching latest market data and Stock market data.
4. Fetched mining data for all the cryptocurrencies
5. Researched more data for social media analysis.

Apart from my role, I kept a check on the team requirements and to bridge the gap.

Accomplishments : My biggest achievement in this segment was to be able to analyze the data fetched and be able to understand the usability of the data.

Challenges : The challenge was understanding the number of factors that are directly or indirectly related to the change of the price of the cryptocurrencies and be able to fetch that data from the right source especially sources that are free.

Also as we were using free database, we had limit of data that could be uploaded on the Mongo DB Atlas cloud. Hence had to create multiple accounts for the same.

Segment 3 :

My role continued to be of a Database & a part of Machine Learning

Role :

1. Fetched more data related to social media accounts to understand and visualize the popularity of certain cryptocurrencies.
2. Fetched News data for sentiment analysis of cryptocurrencies.
3. Preprocessing all the data for Analysis

Apart from database, finalized some options of webpage.

Challenges : Finding the right API for News data. Fetching large amount of data for sentiment analysis

Segment 4 :

My role was of Tools to be used for the project and ensuring that the dashboard is ready for presentation

Role :

1. I guided the team on the presentation. Ensured that the google slides used were presentable. Ensured that the webpage was duly updated.
2. Ensured that everyone presents their work in the group meetings.
3. Conducted a meeting for practicing the presentation pitch.
4. Made the google slides look presentable.

Completed working on the machine learning part for final submission.

Ensured that all README file was updated before submission.

**Team Assessment**

Communication protocols

1. Communication was mostly done via group meetings in the class and messaging on slack.
2. Everyone chose their respective task for the week and updated in the group meetings.

Communication challenges :

Some teammates wouldn’t speak or share until asked about their project work.

The trick would be to first share own work and then ask if they could help build something to enhance that.

Accomplishment : To be able to get the team together and contribute equally to the project.

Thankful to the amazing team mates.

**Summary of the Project :**

**Cryptocurrency Analysis :**

Use machine learning, R, Python, and Tableau to analyze and forecast popular cryptocurrencies and to analyze trends within the decentralized finance (DeFi) marketplace.

Machine Module used :

1. R-Prophet Package : To predict the trend of the market of cryptocurrencis
2. B**idirectional long short-term memory (BI-LSTM)**model – for predicting daily and hourly cryptocurrency prices. Long short-term memory networks which is an extension of recurrent neural networks extends the memory and are a powerful type of recurrent neural network capable of learning long sequence of observations. LSTMs enable RNNs to remember inputs over a long period of time. This is because LSTMs contain information in a memory, much like the memory of a computer. The LSTM can read, write and delete information from its memory.

We were able to predict the prices with an accuracy percentage of 77% to 95%.

1. But as there are a lot of other factors like sentiments, mining profit and difficulties, we conducted analysis on those factors in order to provide more insight into the prediction of the prices.