Project Proposal

Project Title: NFT price prediction using Discord community sentiment.

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Project Category/Topic: Natural Language Processing and Machine Learning

Project Aim: The Project aims to find the correlation between the discord users' sentiment around a NFT project mint day and the price of NFT after mint. With various methods of NFT price prediction in literature, sentiment analysis of the NFT in chat forums can be a feature to use for predicting the price of this new age collectibles.

Related work: Non-fungible tokens (NFTs) are blockchain-based assets representing ownership of unique digital items. The NFT market has surpassed $37bn this year up to 1 May, putting them on track to beat the $40bn in 2021[1]. This has caused a great intrigue to understand the pricing of these NFTs and their tokenomics [2]. The authors of article "The Economics of Non-Fungible Tokens" [3] have pointed out that NFTs may potentially become a cornerstone of the metaverse and Web 3.0, the next evolution of the internet. Literature has shown the pricing behavior of NFT market, and that it is very distinct to that of Cryptocurrencies, even though NFTs are bought using cryptocurrency [4],[5]. In the paper "Mapping the NFT revolution: market trends, trade networks, and visual features" the authors have used statistical properties of the market, a network of interactions between traders, and a clustering of objects by visual features and collections to propose a linear regression model to predict NFT prices [6]. The paper "The NFT Hype: What Draws Attention to Non-Fungible Tokens?" focuses on utilizing vector autoregressive models (VARs) to show that core cryptocurrencies, namely Bitcoin (BTC) and Ether (ETH) draw the most attention towards predicting future NFT price [7]. Authors in the paper [8] try to apply Hedonic pricing model to identify behavioral price determinants of NFTs. NFTs are a fast-evolving industry and social media is one driving factor, and relationship between user activity on Twitter and price on Open Sea (NFT Marketplace) was established in [9]. With most of the upcoming NFT projects using Discord server as their means of hosting an online community [10], it is imperative to understand the sentiment of members in these channels towards the success of a NFT project.

Project Objectives/Deliverables:

- Data Scraping from Discord chat channels: Discord doesn't have a straightforward method to export chats, bringing in the challenge for data extraction.
- Initial Data cleaning and scoring of each message based on the AFINN lexicon.

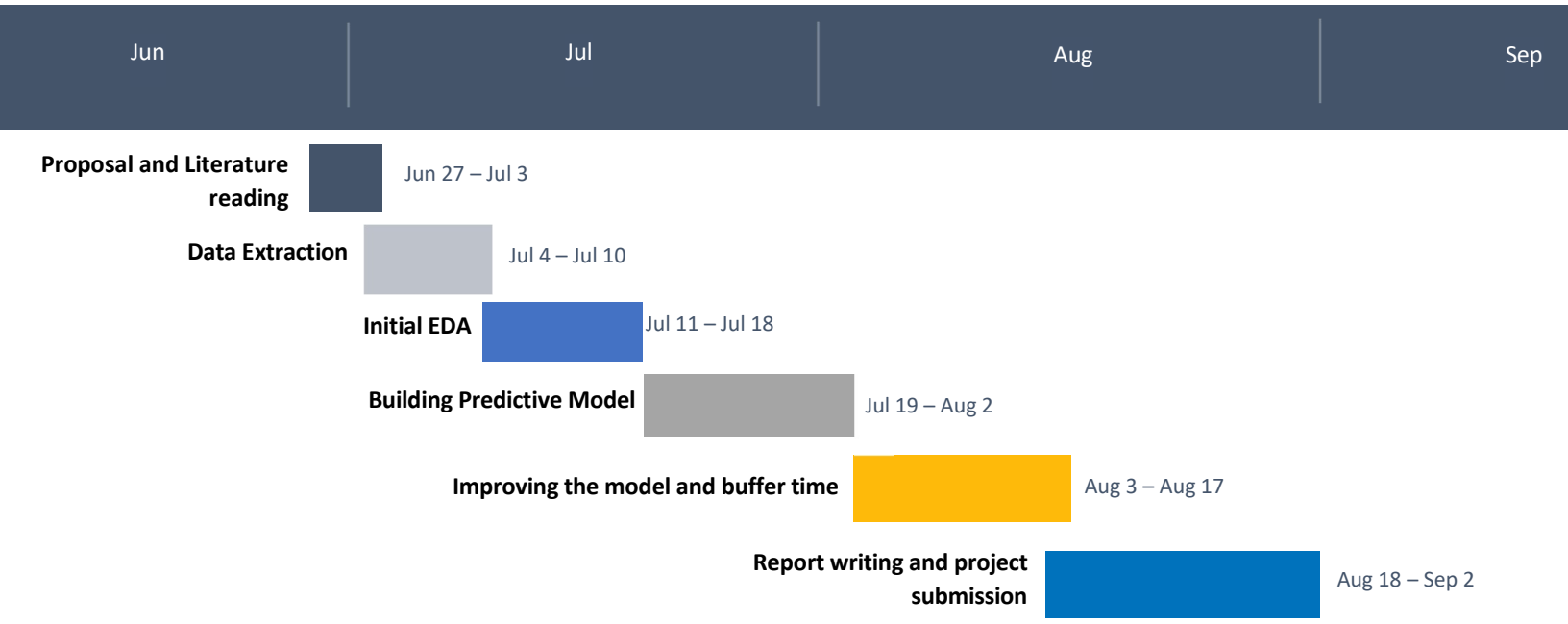
- Exploratory Data analysis and feature engineering to check the feasibility of regression.
- Initial regression model with sentiment scores, mint price, number of active members and NFTs available to purchase as features.
- Fine tuning the model for better performance.
- Report writing.

Methodology: The entire collection of a particular NFT project is released into the market on so called Mint Day with a fixed mint price, where buyers acquire it as long-term investment or for short term profits, or simply because they desire the collectible. After the Mint most of these end up listed on NFT Marketplaces like Open Sea for secondary sale or in buyers' crypto wallets. Most NFT project owners consider it a success if all their NFTs are sold on the mint day, and it achieves a great demand post its primary sale (Mint). Using NLP to score the overall sentiment of members of NFT server can help us predict the price of NFTs, a methodology which hasn't been explored thus far.

We will extract the chat messages from various channels of discord server during the build up to Mint Day and in order to extract the sentiment in buying the NFTs. We will also find the active members on these chat channels and compare it to the total supply of NFTs in the project and try to correlate it to the price post the primary sale.

Project plan: My coding skill and experience of implementing Machine learning models is feasible enough to achieve this project.

I have listed the project plan as a Gantt chart:



Risks and contingency plan:

● The accuracy of model might depend upon the amount of different NFT projects we feed as training set, and we might have to resort to extract more data from discord in while testing phase. We can anticipate this and extract data from around 50 NFT projects at least.

● The correlation of sentiment to secondary market price of NFT is just a theory and to prove it through ML is a challenge.

Hardware/Software Resources:

- The student has a 2.9 GHz AMD Ryzen 7 processor with 16 GB RAM Memory which should be sufficient for the project.
- The Dataset is built by the student by extracting messages from Discord server by passing an API request.

References

[1] NFTs: the great rush may be over – but are they in actual decline?:- The Guardian

https://www.theguardian.com/technology/2022/may/06/nfts-rush-decline-jack-dorsey-tweet

[2] https://www.coindesk.com/learn/what-is-tokenomics-and-why-is-it-important/

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[4] Dowling, Michael. (2021). Fertile LAND: Pricing non-fungible tokens. Finance Research Letters. 44. 102096. 10.1016/j.frl.2021.102096.

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[7] C. Pinto-Gutiérrez, S. Gaitán, D. Jaramillo, and S. Velasquez, “The NFT Hype: What Draws Attention to Non-Fungible Tokens?” Sci. China Ser. A Math., vol. 10, no. 3, p. 335, Jan. 2022.

[8] Horky, Florian and Rachel, Carolina and Fidrmuc, Jarko, Price Determinants of Non-fungible Tokens in the Digital Art Market (May 22, 2022).

[9] A. Kapoor, D. Guhathakurta, M. Mathur, R. Yadav, M. Gupta, and P. Kumaraguru, “TweetBoost: Influence of Social Media on NFT Valuation,” Jan. 20, 2022. Accessed: Feb. 04, 2022. [Online]. Available: http://arxiv.org/abs/2201.08373

[10] https://cyberscrilla.com/what-is-an-nft-community/