

PROJECT PROPOSAL

Project Title: Analysis of Trends in the NFT Market: Valuable NFTs, Price Factors, and Wash Trading

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1. Introduction

The NFT (Non-Fungible Token) market has become a significant platform for buying and selling digital assets. However, this market is influenced by various dynamics such as price fluctuations, trends, and fraudulent activities like wash trading. This project aims to analyze valuable NFT collections, identify factors affecting NFT prices, and detect manipulative activities such as wash trading.

2. Project Objectives

The objectives of this study are:

- **Analyzing NFT Market Trends:** Examining how NFT sales change over time.
- **Identifying Factors Affecting NFT Prices:** Analyzing which criteria drive NFT prices up or down.
- **Examining the Most Valuable NFTs in Collections:** Identifying common characteristics of the most expensive NFTs.
- **Detecting Wash Trading:** Uncovering price manipulations in the NFT market.
- **Analyzing Seasonal and Periodic Changes in the NFT Market:** Understanding how NFT sales fluctuate throughout the year.
- **Examining NFT Price Volatility:** Identifying which NFTs have stable prices and which experience high volatility.

3. Methods to be Used

- **Data Analysis and Visualization:** Conducting statistical analyses and creating visual representations of large-scale NFT sales data.
- **Frequent Pattern Mining:** Identifying common features that influence NFT prices.
- **Clustering:** Grouping NFTs and collections with similar characteristics.
- **Outlier Detection:** Identifying wash trading activities to enhance market transparency.
- **Time Series Analysis:** Examining NFT price fluctuations and seasonal trends.

4. Expected Outcomes

- The most influential factors affecting NFT prices will be identified.
- The collections that contain the most valuable NFTs will be determined.
- Wash trading activities will be detected, providing insight into market manipulations.
- Periodic trends and price fluctuations in the NFT market will be analyzed.

5. Conclusion

This project will provide a comprehensive data analysis to better understand the NFT market and offer valuable insights for investors. It will enable a more accurate evaluation of NFT value, popularity, and market dynamics.

DATASET

The dataset "OpenSea NFT Sales 2019 - 2021" includes data on NFT transactions from the OpenSea platform between 2019 and 2021. It contains information such as transaction dates, NFT prices, asset names, sales counts, and buyer/seller data, offering a comprehensive view of the NFT market over this period. This dataset is large, with multiple entries reflecting various NFTs and their sales, providing key insights into market trends, pricing, and trading behaviors.

<https://www.kaggle.com/datasets/bryanw26/opensea-nft-sales-2019-2021/data>

TOOLS

For data analysis and visualization, we plan to use a combination of powerful tools to process, clean, and analyze the data effectively. These tools will help us perform detailed analysis, identify patterns, and visualize trends in the NFT market. By leveraging these technologies, we aim to gain valuable insights and enhance our understanding of market dynamics and trends.

- **Data Collection and Processing Tools**
Python (Pandas, NumPy) → Data processing, cleaning, and analysis
SQL → Querying large datasets
- **Data Analysis and Modeling**
Matplotlib, Seaborn, Plotly → Data visualization
Scikit-learn → Clustering, outlier analysis (Wash Trading detection)
MLxtend → Frequent Pattern Mining
- **Auxiliary Tools**
Power BI → Visualizing NFT market trends

TASKS	March 12-19	March 20-30	April 14-21	April 22-28	May 1-22	May 23-31	June 1-9
Determining Algorithms	Zeynep Çalapkulu & Asli Ayaz						
Data Preprocessing & Cleaning		Zehra Bengisu Doğan & Zeynep Çalapkulu					
Initial Analysis			Asli Ayaz & Zehra Bengisu Doğan				
Progress Report Preparation				Zehra Bengisu Doğan & Zeynep Çalapkulu			
Implementation					Zeynep Çalapkulu & Asli Ayaz		
Visualization						Asli Ayaz & Zehra Bengisu Doğan	
Final Report & Checks							All Members