Network Analysis for Friend.tech

ISYE 6740

Project Proposal

Team 022

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I.   Introduction

In today's digital world, getting a grasp on how people connect and exchange money online has never been more important. That's why our project aims to dive deep into Friend.tech, a social platform where people chat and trade tokens. We'll be looking closely at how users interact and where the money flows, giving us a clear picture of the online community and its financial movements. By leveraging data from Friend.tech's API, we aim to uncover insights into user behavior, community structures, and financial dynamics within the network. This analysis will involve mapping out the intricate web of interactions between users, identifying key influencers, and tracking the movement of tokens and funds across the platform. By understanding these elements, we hope to provide a detailed picture of how users engage with one another, how communities form and evolve, and how financial activities influence the social dynamics on Friend.tech. This project not only seeks to fill the gap in current research on social platforms integrating token economies but also aims to contribute practical insights that could help improve user engagement strategies and enhance the platform's design. Ultimately, our work will shed light on the underlying mechanics of Friend.tech, offering valuable perspectives for both users and developers.

II.   Background

Friend.tech is a one-of-a-kind platform that mixes social interactions with token trading. Launched in 2023, it quickly became popular by letting people buy and sell shares of their social connections. This setup not only encourages people to stay engaged but also helps build a lively and active community. Over time, Friend.tech has evolved, incorporating new features and expanding its user base, while continually shaping the way social and financial interactions occur online.

According to Dune Analytics the platform has seen significant activity, with total protocol fees amounting to $22,313,176 USD. Friend.tech has seen a huge influx of money, totaling $624,768,935 USD, showing just how financially active the platform is. People have bought shares worth $217,560,360 USD and sold shares worth $228,703,169 USD. With 915,579 unique buyers, it's clear that the platform has widespread appeal and a lot of active users (Dune Analytics, n.d.).

III.   Problem Statement

Understanding the dynamics of social platforms like Friend.tech is critical for improving user engagement, identifying key influencers, and optimizing financial transactions. This comprehensive understanding can lead to enhanced user experiences, increased platform loyalty, and better financial performance. However, there is a significant lack of comprehensive analysis that integrates user behavior and community structures.

Our project aims to bridge this gap by doing a deep dive into the network on Friend.tech. We want to uncover valuable insights about how the platform works. This isn't just for academic purposes—it has real business implications. For example, Dune Analytics reports that the platform has seen a lot of activity, with total protocol fees reaching $22,313,176 USD. This substantial revenue indicates strong user engagement and financial interaction within the platform. Our project aims to provide these valuable insights, ultimately contributing to the strategic growth and success of Friend.tech.

IV.   Objectives

Our project has several key objectives aimed at providing a comprehensive analysis of the Friend.tech platform.

- Network Construction: Model users as nodes and interactions as edges.
- Influence Analysis: Identify key influencers using centrality measures.
- Community Detection: Use clustering algorithms to identify user communities based on influencer ownership and portfolio characteristics.
- Visualization and Reporting: Effectively communicate findings through visualizations.

V.   Proposed Methodology

Our proposed methodology encompasses several key steps, each designed to ensure a thorough analysis of Friend.tech's network.

Data Collection is our first step, where we will use Friend.tech's API endpoints to gather data on users, interactions, and financial activities. This data includes user profiles, token trades, holdings, and messaging activities. We will then store this data in a structured format suitable for analysis, such as a relational database or data frames, ensuring that it is organized and easily accessible for subsequent steps.

In the Network Construction phase, we will represent users as nodes in the network. The edges connecting these nodes will be defined based on user interactions, such as token trade activities, holders, and posts. This approach will let us see and understand the complex relationships and interactions on the platform, giving us a clear picture of how the network is structured.

For Influence Analysis, we'll figure out who the key players are by measuring things like their number of connections, their control over information flow, and their central position in the network. These insights will help us identify the most influential users and understand their impact and reach.

Next, we'll look at Community Detection by using clustering methods like k-means and spectral clustering to find different groups within the network. These techniques will help us see how users naturally group together based on their interactions. This will give us a better understanding of user behavior, engagement patterns, and the various subgroups within the platform.

VI.   Planned Evaluation Strategies

Our evaluation strategies are designed to ensure the accuracy and effectiveness of our analyses. Given our time constraints and data availability, we will focus on achievable validation methods and adhere to a streamlined timeline.

We will validate and compare the constructed network graphs with the API data and publicly available summaries from Dune Analytics to ensure their accuracy. This step is crucial to validate that our network accurately represents the real-world relationships on Friend.tech. Since we cannot download data from Dune Analytics, we will use it as a reference point for cross-verification.

To evaluate the identified communities, we will use metrics such as modularity and silhouette scores. These metrics will help us assess the quality of the clustering algorithms in

detecting meaningful community structures. Additionally, we will perform manual inspections to ensure the detected communities make logical sense within the context of our data.

We will cross-check the identified influential users with known influencers on the platform based on our collected data. This validation step will ensure that our centrality measures and proxy metrics accurately reflect user influence. Since external validation is limited, we will rely on engagement metrics from our dataset to verify our findings.

Timeline and Task Allocation

To ensure a systematic approach to our project, we have outlined a timeline with specific milestones for the next four weeks:

1. **Week 1: Data Collection and Initial Network Construction**
   - Use API endpoints to gather user, interaction, and financial data.
   - Store data in a structured format.
   - Begin building the network graph.
2. **Week 2: Network Construction and Community Detection**
   - Complete the network graph.
   - Apply clustering algorithms for community detection.
   - Evaluate community detection with modularity and silhouette scores.
   - Perform manual inspection of communities.
3. **Week 3: Visualization and Reporting**
   - Visualize the network.
   - Create charts and graphs.
   - Compile a comprehensive report summarizing findings and insights.

Reference

Dune Analytics. (n.d.). *Friend.tech dashboard*. Retrieved June 26, 2024, from https://dune.com/cryptokoryo/friendtech