🍹 Poolside

The DeFi prediction protocol

https://poolside.finance

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Overview

Poolside is a protocol that transforms blockchain decentralized finance activity into predictions and recommendations.

While the Graph is designed for curating and indexing blockchain data, Poolside is designed for producing useful predictions from this data. Just as all major cloud computing platforms now offer prediction API products to augment their hosted graph database products and the two types of products achieve operational efficiency through a shared backend, Indexers providing services in the Graph network can adopt Poolside to add a prediction API product to their own suite of product offerings, achieving operational efficiency through a shared backend. The indexing infrastructure they are already operating for the Graph becomes an underutilized fixed asset that is repurposed to provide additional value and generate additional revenue.

The core of Poolside is the PoolRank system for generating predictions. Just as Google's PageRank was a system for determining the relevancy of individual webpages that was developed at a time when the web was evolving too quickly to organize manually, PoolRank is a system for determining the relevancy of individual DeFi entities because DeFi will be evolving too quickly to continue organizing manually.

Unlike Google, Poolside is using an open approach to solving its ranking task by allowing each service provider on the network to use their own PoolRank implementation and by governing the

protocol itself through a decentralized autonomous organization.

System Architecture

The Poolside network ecosystem consists of Indexers, Consumers and Delegators. The PLSD token is used for economic interactions between these three groups of users, and is also used for participation in Poolside DAO governance.

Indexers

Indexers provide Poolside API services to consumers. The PoolRank software used to generate token rankings will generally involve querying various Graph protocol subgraphs. Because of this, most Poolside Indexers are likely to also be Graph Indexers. Their indexing infrastructure for being a service provider on the Graph is reused with minimal additional overhead to generate a new revenue stream through Poolside. Alternatively, some Poolside Indexers may opt to not run their own indexing infrastructure, instead choosing to pay third-party graph indexers in GRT for subgraph queries or using a PoolRank implementation that does not rely on querying subgraphs.

Consumers

Consumers pay Indexers for their API service. For each request made, consumers must pay a Indexer-specified fee of PLSD for each of the PoolRank scores they are requesting.

Delegators

PLSD holders will be able to delegate to Indexers, and earn PLSD based on a percentage of Indexer revenue that can be specified by the Indexer. Delegation acts as a method of recommending Indexers to consumers, as delegators will want to delegate to Indexers that will continuously distribute the greatest ratio of fees earned to current delegation level, and may use Indexer performance related factors to determine to whom to delegate.

Token Ranking API

The first API offered by Poolside Indexers will be the Token Ranking API, which ranks the predicted relevancy of tokens to a DeFi user.

The Token Ranking API takes as input a list of addresses. For each of these specified addresses, the API returns a ranking of tokens by their predicted relevancy, with a PoolRank score provided for each of the ranked tokens. If no additional arguments are provided, the top rankings for each input address is returned. If an optional list of tokens to rank is provided, the ranking for each of the specified tokens is returned. Indexers charge a customizable fee, where each PoolRank score returned requires a specified payment of PLSD.

PoolRank

PoolRank is the system by which ranking scores are provided between two blockchain graph nodes - typically a user address and a token address. Indexers can utilize and customize official

PoolRank configurations, and will be able to choose to use their own proprietary configurations.

PoolRank configurations will generally make use of the Graph protocol, which transforms raw blockchain transactions into easily queryable data. A typical configuration for the Token Ranking API will include querying the subgraphs of exchanges such as Uniswap and Balancer, and other popular decentralized applications that may be helpful in indicating the DeFi interests of a user. Each token that a user has interacted with is assigned a Token Ranking that is based upon the volume, recency, and frequency of the user's interactions with it and the types of interactions.

Because the requested tokens to rank may not be included in the user's blockchain activity, their queried activity data must be supplemented by additional data sources used for calculating rankings. This additional data source may start off being as simple as assigning tokens into clusters based on strongly correlated price action, which can often be a simple proxy for if the market considers tokens to be related.

PoolRank will evolve increasingly toward algorithmic and machine learning based approaches. This whitepaper will not go into depth regarding neural network and machine learning implementation details, although it is worth noting that from relatively simple algorithmic approaches such as k-nearest neighbor graphs to more sophisticated approaches like deep graph learning, this is a quickly developing field with many high quality open source libraries and tools being released on a frequent basis. The exact implementation of models and parameters these approaches require will form the basis for Indexers competing to develop proprietary PoolRank configurations that produce the highest quality predictions.

Poolside News

The first consumer of Poolside will be Poolside News - a product developed by the Poolside DAO that will generate personalized DeFi updates powered by PoolRank recommendations. To get started using Poolside News, a new user simply needs to provide their preferred mode of contact (email, Telegram, Discord, etc.) and can sign in with their wallet at poolside.finance so that their activity history can be used to generate recommended content.

New items will be derived from several sources, including Twitter, RSS/ATOM feeds from relevant news sources, and updates may be derived directly from queries of certain DeFi subgraphs.

Each news item is tagged with matching tokens or apps. This topic classification will initially be implemented using simple techniques such as matching on relevant substrings such as the name or ticker symbol of a DeFi token found in the title or body of a news feed item, and may later incorporate more sophisticated topic classification techniques. News items will be filtered based upon the currently calculated PoolRank of matched topics for each subscribed user.

In addition to Poolside News demonstrating the capabilities of Poolside, and bootstrapping usage of the network, it will also be possible to monetize Poolside News and subsidize its operational cost through promoted content added to its news digests, and potentially through subscription fees.

Roadmap

PoolRank Enhancements

PoolRank recommendations could expand to better be able to predict interest in various types of non-fungible tokens, as well as action-oriented recommendations, such as recommending to swap or borrow a token at a certain price or interest rate. These types of recommendations would improve Poolside's utility in the context of trading.

Payment Escrow and Indexer Staking

A simple escrow system will be introduced that will confirm that an Indexer has returned the correct number of properly formatted scores before releasing payment for a request.

The evolution of this escrow would be to transition our delegation feature into a staking mechanism that will actively penalize Indexers for not returning the correct number of properly formatted scores, and would also allow Indexers to attest that they are using a certain official PoolRank configuration. Because the scores determined for a given request using a specific configuration should be deterministic at the time of the request, it will be possible for customers or auditors to challenge the integrity of scores provided by Indexers, in which case the challenger provides a deposit, and the Poolside DAO decides by governance vote whether to penalize the Indexer and its delegators, or the challenger.

Attribution Modeling

Within the context of advertising or recommendation systems, attribution for a user action, either directly after an impression (direct conversion), or within a window of time (view-through

conversion) is used to assign credit to the advertisement or recommendation. The modeling of attribution can be incorporated into the economics of an advertising system via cost per conversion metrics, and can also be used to provide training data to machine learning models that are generating the predictions of what recommendations or advertisements will result in conversion. Adding an attribution modeling mechanism to Poolside could be incorporated into the Indexer-Consumer economic scheme and could be utilized as feedback for PoolRank machine learning models. The risk of conversion fraud would need to be addressed, and there are a number of other considerations when designing attribution modeling mechanisms.

Poolside for Apps

Initial tooling for apps will include Poolside.js, a javascript library that makes it easy to incorporate Poolside recommendations into an app. It would also be possible to develop tools that utilize Poolside-generated insights for product intelligence and developing campaigns for customer retention and acquisition, especially if Poolside incorporates attribution modeling. These acquisition and retention campaigns may utilize messages and offers sent to Poolside News subscribers who have opted into these types of updates.

Thanks

A thank-you section will be added here for people who have contributed feedback or have otherwise been helpful.