Bluwhale

A Decentralized AI Personalization Protocol for Blockchains

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Abstract

In a world dominated by personalized digital experiences, driven by our preference for apps that truly understand us, the need for hyper-personalization is evident. However, achieving this level of personalization relies on the acquisition of millions of users and interconnected data points within the confines of web2 silos. To break free from these network monopolies and pave the way for future consumer-facing web3 applications, fostering interoperability and user data collaboration is imperative.

Enter Bluwhale, a decentralized personalization protocol designed to transform user and contextual data into shared knowledge graphs. These graphs empower dApps, AI models and agents to personalize efficiently by training on combined user data networks. This paper introduces an innovative incentive structure for decentralized applications (dApps) to collaborate within an interoperable ecosystem while simultaneously competing.

The envisioned ecosystem promises several advantages for end-users, including control over personal data, user-centric functionalities, cross-platform communication and preference profiles between applications, as well as active participation in the value-creation process. As a result, this network holds the potential to challenge and ultimately surpass the dominance of existing consumer monopolies.

1. The Data Monopoly Dilemma

In today's digital landscape, we find ourselves in an era where the internet is dominated by a small number of powerful corporations. These entities, including prominent platforms like Facebook, LinkedIn, YouTube, and Amazon, pose a significant threat to individual privacy and rights. They exploit user data and content within their closed networks, reaping substantial economic benefits in the process. This concentration of power not only stifles emerging competitors but also forces new businesses and users to become reliant on these platforms. Such dependency influences the flow of information, the distribution of money, and the ways people are rewarded.

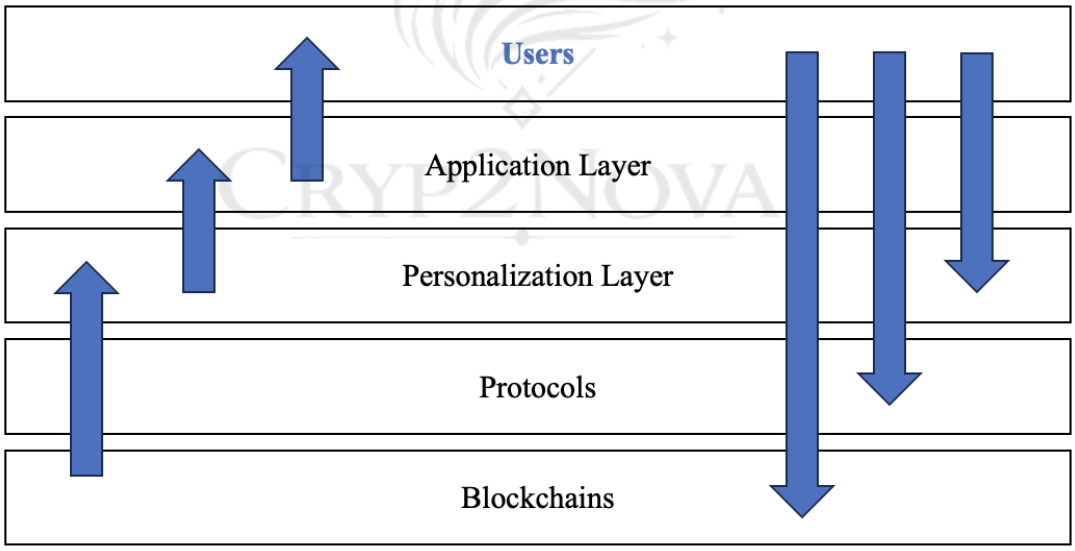
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The crux of this issue is rooted in how these dominant players hoard user data and leverage network effects within isolated systems. This strategy effectively blocks out competition and gathers extensive user bases and data. They achieve this by increasing the costs associated with switching platforms, thereby binding users to their services. This lock-in effect is reinforced by the users' own data regarding their relationships and preferences, which are held within the confines of the application.

1.1. Open User-Centric Ecosystems

Blockchain technology offers a solution to the current inequities of the digital world. By fostering a decentralized environment, it restores power to users, enabling them to manage their content, connections, preferences, and communications. This approach allows individuals to actively partake in value creation by optionally contributing their data to decentralized applications (dApps) and AI systems. In such a system, applications would be better equipped to understand and cater to user preferences, offering highly personalized services in a vast digital landscape filled with endless assets, products, and services. To realize this vision, it's essential to develop an interoperable and open ecosystem for dApps to share user networks and for users to communicate, engage, and participate freely, while also benefiting financially from the value they generate on each dApp.

Figure 1 - User-Centric Intelligence Layer = Personalization Layer



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2. Decentralized Personalization Protocol

In the evolving landscape of web3, many companies primarily focus on using financial transactions as a key strategy for market entry, often through the issuance of tokens with carefully designed incentive structures. This approach predominantly nurtures a market driven by short-term financial gains instead of long-term retention, leading to user attrition during downturns in the crypto market. A shift in strategy is needed, where web3 enterprises prioritize creating high-quality products/games/services that genuinely delight users and foster engagement and enjoyment for stickiness. Overlaying a financial incentive structure afterward can then establish a more sustainable environment that encourages long-term user loyalty.

At the heart of this new approach is the concept of a decentralized personalization protocol. This protocol transforms user information into a queryable, vector-graph-based layer that consolidates data from various blockchain networks, organizing it around individual user profiles. This aggregation facilitates a seamless experience across different decentralized applications (dApps), allowing users to optionally share their preference profiles with the dApps they interact with. When users choose to share their data, they become a part of the revenue distribution system and are actively rewarded through the value-creation process. Conversely, if they opt not to share their personal data, they maintain their privacy and are treated as any other anonymous user within the application layer. This dual approach respects user autonomy while fostering a more user-centric and inclusive web3 ecosystem.

2.1 Design Principles

For the upcoming wave of decentralized applications (dApps), a blend of data intensity and user-centric approaches is paramount. Key elements must be implemented to create a user-focused data access layer, which includes:

2.1.3 Interoperability

Initially, interoperability is crucial for dApps to utilize a collective user data network. However, dominant players often isolate themselves once they accumulated a large user base, akin to web2 monopolies. To maintain interoperability, incentives should prioritize end-user benefits to encourage loyalty to the advantages of an open network, and secondarily, promote long-term enterprise collaboration. This can be achieved through data availability of network-unique data, price incentives for early adopters, and sharing revenue for ecosystem participation.

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2.1.4 Trust

For a knowledge base structured as a vector-graph, verifying user and contextual data accurately is essential. This can be done through both passive and active methods without repetitive verification. Actively, we can use tokens and social behavior to encourage users to authenticate their profiles with off-chain data, rewarding them and their social circle for verified interactions. Passively, AI can be employed to collect, analyze, and differentiate authentic user activity from bots or malicious profiles.

2.1.5 Fair Market Value

Data access is contingent on user approval and is valued in accordance with fair market principles. The cost of accessing a particular user's data is determined by enterprise demand, with pricing governed by market dynamics of supply and demand. As interest in a user's data increases, the price correspondingly escalates, reflecting the growing number of entities seeking access. The network, ensuring overall ecosystem stability, levies a nominal fee on each transaction.

2.1.6 Data Availability

While enterprises may be willing to pay for data access, the consumer has the ultimate authority to allow or deny data availability. The network ensures that once access is granted, the data remains accessible for queries as long as payments continue.

2.1.7 Inflation/Deflation

The network aims to enhance data contributions, both on-chain and off-chain, by users and enterprises. This influx of data can lead to deflationary effects, as more supply could lower query prices and token value. To counter this, a token burn mechanism is necessary, where tokens are eliminated with each enterprise query. This helps maintain a balance in the network's economy and token value.

… [To be continued]

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