DECENTRALIZED ADAPTIVE ENDOSED ACTIVIES BY IMPLEMENTING BLOCKCHAIN TECHNOLOGY

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ABSTRACT

Online social networks (OSN) are a growing part of people's everyday lives, but the fact that they are all centralized raises a number of management, security, and privacy concerns. Blockchain-based decentralized architecture provides a way to address the aforementioned issues. In this article, a decentralized OSN service that uses blockchain technology is constructed. The Interplanetary Filesystem (IPFS) may be used to decentralize large volumes of data that are often required with minimal security requirements. For user autonomy, a decentralized autonomous organisation is created, allowing users to democratically run the OSN.

Keywords - Blockchain, Online Social Network (OSN), Decentralized Autonomous Organization (DAO).

1. INTRODUCTION

Every day, millions of people all around the world log into their favourite OSN to update their friends and family on their daily goings-on. More than four billion people worldwide now have access to the Internet, and another three billion people utilise some kind of social media. Giving social media and

Social Networks a lot of weight, especially in the context of privacy management, is a growing trend. The most widely used OSNs nowadays are centralised, meaning that user data is stored on a small number of central servers. Data may be managed, sold, or stolen without the active involvement of the data's owner, which is one of the many problems with the centralised structure. The Cambridge Analytica scandal is the most prominent controversy surrounding Facebook.1 Roughly 87% of all Facebook users downloaded an app that accessed their friends' and acquaintances' profiles.

Cambridge Analytica received the data and used it for political purposes. As serious as this privacy breach is, it is no longer the only issue of its kind. Censorship is, unfortunately, another issue with today's societal structures. Some countries have taken the unusual step of banning Facebook, including China, Tunisia, Iran, etc. The primary impulse that has led to the decentralisation of social services can be seen in all of these cases. An Online Social Network (OSN) [1] that runs on a decentralised platform such a network of trustworthy servers, P2P systems, or an opportunistic network is called a Distributed Online Social Network (DOSN). Numerous DOSNs [2–5] have been proposed over the past decade, and these systems mark the first step towards a new generation of online social networks. There has been a significant shift in decentralisation strategies over the last few years, coinciding with the widespread recognition of Blockchain technology as the revolutionary solution to the many problems that plague centralization in many academic sectors. Simply said, a blockchain is a distributed public record of documents that are kept in common by a group of people working together. The widespread interest in blockchains nowadays can be traced back to Bitcoin [6], the first major application built on the Blockchain technology. Ethereum 2 is the second major utility; it was released in 2015 with the cutting-edge concept of smart contracts, which are bits of code that describe self-executing contracts with the terms of the settlement between buyer and seller. The fundamental impetus to combine social structures with blockchain technology has been the failure of DOSNs and the expansion of concerns surrounding OSNs, such as fake news and records disclosure. There have been a number of potential uses.

2. LITERATURE REVIEW

Sastha Sankar CJ, Sree Dhanya TP, Vivek K, Prof. Nitha TM et.al: People's reliance on online social networks has grown, yet the management, security, and privacy issues associated with their centralization are legitimate concerns. A decentralized architecture for online social networks based on blockchain technology has been offered as a solution by the research community to these problems. Using Web 3.0 and the Solana

blockchain, we offer a decentralized application for a social media platform. Online social networks' existing centralized data management approach has led to privacy breaches. Unlike conventional online social networks, the Decentralized Social Media (DSM) structure prioritizes user privacy and data protection. Using the blockchain as a trusted server to deliver centralized services, Decentralized Social Media - DSM provides a decentralized social framework that combines the best features of centralized and decentralized networks [2].

Ningyuan Chen; David Siu-Yeung Cho et.al: The importance of online social networks (OSNs) in people's everyday lives is growing; yet, all major OSNs are centralized, which creates a number of security, privacy, and management concerns. The aforementioned problems can be addressed thanks to the decentralised nature of a blockchain-based architecture. In this article, we use blockchain technology to create a decentralised OSN service. Interplanetary Filesystem (IPFS) is ideal for storing large volumes of data with minimal security needs. By creating a decentralised autonomous organization, users are given the freedom to democratically run the OSN on their own terms [3].

Le Jiang, Xinglin Zhang et.al: The prevalence of online social networks (OSNs) is growing, however the centralised data management system poses a privacy risk. While the rise of distributed OSNs (DOSNs) has the potential to address this privacy concern, these networks' inefficiencies in delivering core features like access control and data availability must also be taken into account. In this article, we take into account the problems experienced by OSNs and DOSNs and use the new blockchain technology to create a DOSN framework that combines the best features of both types of networks. In order to offer centralised control services, we leverage a combination of smart contracts and the blockchain as a trusted server. To ensure that consumers remain in full control of their data, we have partitioned the storage services. In the experiment, we put the suggested framework through its paces using data from the actual world [4].

3. SYSTEM ANALYSIS

3.1 EXISTING SYSTEM

The introduction of decentralised digital currencies made possible by blockchain technology has altered the face of modern finance. Because of Blockchain's verifiability, it has now been used to a wide variety of other domains. Many various approaches have been suggested to decentralise the Internet in light of the current trend towards pursuing a decentralised Internet, with consideration given to infrastructure, protocols, services, and applications[10].

The potential of Blockchain to serve as a reliable and secure decentralised paradigm for the Internet is

being explored by an existing system. In this article, we take a critical look at the most up-to-date Blockchain-based approaches that can decentralise the Internet of the future. In light of the present Internet and Blockchain issues, and bearing in mind a variety of design factors, we select and examine two research topics of Blockchain that give significant effect in realising the decentralised Internet. The first is the consensus algorithms, which play a crucial role in the distributed nature of the Blockchain.

The system determines that PoP, Paxos, and PoAH are the three most suitable consensus algorithms for such a large-scale Blockchain-enabled Internet architecture. We also looked at how Blockchain interacts with other new Internet technologies and whether or not it is compatible with them. Such new Internet technologies, when combined with Blockchain, would make the latter more optimized, efficient, and appropriate for decentralised Internet operations.

3.2 PROPOSED SYSTEM

Based on blockchain technology, the suggested system's design for an online social network would be completely decentralised and autonomous. Because each member in a blockchain network has their own private key and identity, the network is secure and reliable. The private key is the most powerful account access credential and is kept on the user's device. on addition, the private key is required to sign every transaction on the block chain. In order to offer the system skills of self-administration and sustainable growth, a decentralised autonomous mechanism powered by block chain is included in the design[11].

Here is how the remainder of the system is laid up. We begin with a brief history of the technologies that contribute to this design. Second, we talk about the architecture in great depth. The project's utility is shown in the third section. A decision is reached at last.

4. BACKGROUND

By presenting blockchain technology and focusing on its most salient features and uses, we propose a state-of-the-art architecture for contemporary blockchain-based online social media. In addition, we advocate for a summary of the most common solutions to the issues plaguing current Decentralised Online Social Networks (DOSNs). In this article, we trace the evolution of Blockchain-based OSNs and present in detail the main decentralised solutions offered to address the privacy issue of centralised OSNs.

4.1 BLOCKCHAIN TECHNOLOGY

A blockchain is an authentic distributed public ledger of data that is used by several parties simultaneously. Like a series of linked building blocks, each one is built atop the one below it. The previous block's cryptographic hash, a timestamp, and transaction data are all included. Since the

distributed ledger is available to all users and is updated and saved in sync, once a block is added to the chain it cannot be altered. In fact, when a new transaction is added to the ledger, it is encrypted and verified by the network's other users. With the use of a consensus mechanism, a transaction is considered valid and added to the ledger if the majority of users agree that it is. Two of the most important features of blockchain technology are its distributed consensus system and its anonymity.

In the Blockchain implementation presented by [6], three fantastic technologies—Byzantine fault-tolerant systems, Digital time-stamping, and cryptographic primitives—are combined. Broadly speaking, [7] describes a number of characteristics shared by Blockchain protocols: • Unchangeable. This implies that modifying or tampering with a block is very difficult. In a blockchain, data is immutable once it has been recorded.

Spread around. This indicates that every node in the network has access to a shared copy of the ledger.

No One in Charge Here. The architecture is decentralised and uses a peer-to-peer network instead of a central server.

It's important to be resilient. It demonstrates that it is resistant to theoretical assaults.

4.2 TOWARDS THE DECENTRALIZATION OF OSNS

The current generation of OSNs relies only on centralised platforms, which presents a number of issues, such as scalability, provider reliance, and privacy, as discussed in [1, 2]. In particular, the rapid growth and popularity of OSNs have resulted in two significant phenomena: more consumer privacy disclosure and a corresponding acceleration in the rate at which news travels. Online social networks (OSNs) have become a major source of character privacy leaks. Most recently, in early March of 2018, there was a scandal involving the personal information of Facebook users known as the Cambridge Analytica scandal4. Specifically, the firm had obtained and misused private information about Facebook users from an external researcher who had assured Facebook he was doing so for academic study. Facebook's "This Is Your Digital Life" project has been exploited to harvest the data of 87 million users.

The main problems of OSNs, especially the privacy risk, have been provided with decentralised solutions. Using the decentralisation of social services made possible by distributed platforms, DOSNs are Online Social Networks. When OSNs are decentralised, instead of having a single entity responsible for ensuring the system's flawless operation, it is instead a group of peers who take on and split up those tasks among themselves. The removal of a monopolising body to set and alter the conditions of service is only one of many wonderful results of this development. Delay-tolerant social networks and/or P2P networks are only two

examples of the novel device models that will become possible as we move away from a centralised internet service and towards a decentralised system.

5. SYSTEM ARCHITECTURE

5.1 REMOTE USER FLOW CHART

There are n people currently logged into this module. Users need to sign up first before they can do any actions. Information provided by users upon registration will be saved in a database. He will be required to provide his valid user name and password when his registration has been approved. After successfully logging in, a user may do actions like as seeing their profile, all users, friend requests, friends, tweets, and friends' tweets.

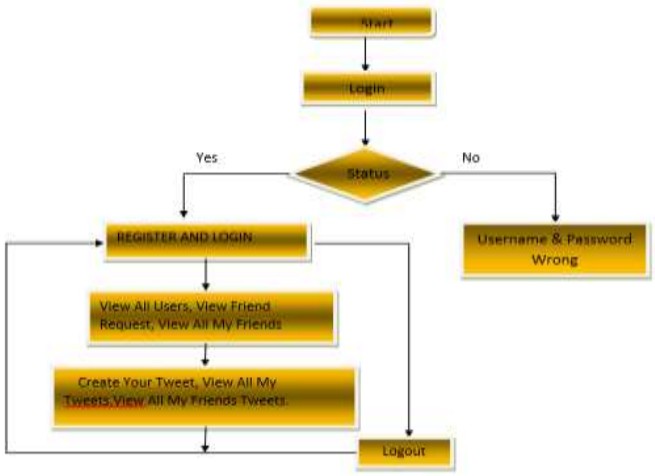

Fig 5.1. User Flow Chart

5.2 FLOW CHART FOR SERVICE PROVIDER

The Service Provider must provide a valid user name and password to access this section. Following a successful login, he will be granted access to features like View All Users and Authorise. Browse All Adherents, Insert and Browse Filter, You may check out the total tweet score, user tweets, user retweets, user attitudes towards cyberbullying, user attitudes towards cyberpositive and user attitudes towards cybernegative.

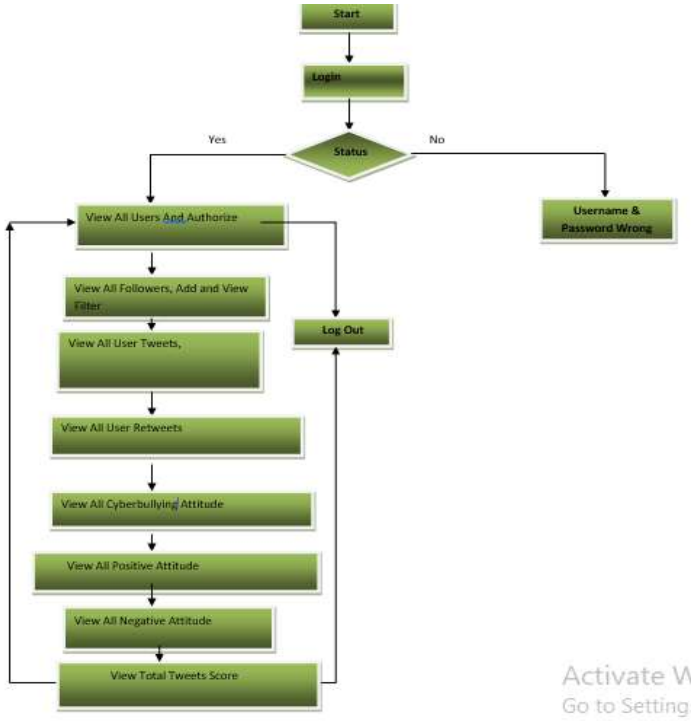

Fig 5.2. Service Provider Flow Chart

6. RESULTS

1. Admin

In order to utilise the register feature, a user must first generate a wallet address, which is then added to the distributed ledger. Safe algorithms are used to encrypt the identification so that no one else may

access it. Once the user has created their identity, they can log in to the service.

Fig 6.1. Home page

Fig 6.2. Admin login

Fig 6.3: Admin main page

2. User

The wallet handles all security functions, including as private key storage and administration, signing a transaction, and the command-line interface (CLI) Client allows users to connect with the blockchain. All sensitive data, such as private keys, is held in the possession of the end user. This prevents the possible security breach that occurs when sensitive data is sent from a central server in centralised OSNs. Users have complete authority over this data, however it is incumbent upon them to maintain the confidentiality of their personal security data.

Fig 6.4.user registration

3. Output

Since the proposed system would be useless if it did not generate the expected output in the specified format, output testing follows validation testing as the next step. In order to evaluate the outputs produced or shown by the system under review, it is helpful to ask consumers what format they want. Therefore, we take into account both digital and print output formats.

Fig 6.5. Uploaded a figure

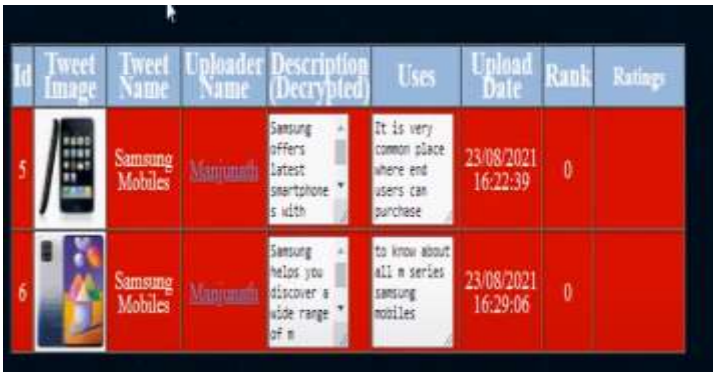

Fig 6.6: Description of product

7. CONCLUSION

This article describes one such blockchain implementation, tailored for OSN. Users don't trust centralised servers with their sensitive data, thus they retain it under their own control. Users also need not worry about a single point of failure if the social network service is decentralised. In addition, all users have access to a DAO where they may take charge of their own social media platform. Without a single strong leader, decentralised OSNs may thrive. The blockchain technology used in this project not only allows for decentralised OSN management, but also creates a decentralised environment for OSN itself.

The current CLI clients are not ideal for most users, thus future work will concentrate on creating a user-friendly interface to replace them. Since a public IPFS network is already being utilised, a separate private IPFS network will be established to better protect the gathered information. Future work in the autonomy section will require the simulation plan, which may make use of tokens to incentivize users to produce more high-quality content in OSN in exchange for payment.

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