SOCIAL MEDIA USING BLOCKCHAIN (ETHCLUB)

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ABSTRACT

Social media has transformed the mode of communication globally by providing an extensive system for exchanging ideas, initiating business contracts, and proposing new professional ideas. However, there are many limitations to the use of social media, such as misinformation, lack of effective content moderation, digital piracy, data breaches, identity fraud, and fake news. In order to address these limitations, several studies have introduced the application of Blockchain technology in social media. Blockchains can provides transparency, traceability, tamper-proofing, confidentiality, security, information control, and supervision. This paper is a systematic literature review of papers covering the application of Blockchain technology in social media. To the best of our knowledge, this is the first systematic literature review that elucidates the combination of Blockchain and social media. Using several electronic databases, 42 related papers were reviewed. Our findings show that previous studies on the applications of Blockchain in social media are focused mainly on blocking fake news and enhancing data privacy. Research in this domain began in 2017. This review additionally discusses several challenges in applying Blockchain technologies in social media contexts, and proposes alternative ideas for future implementation and research.

Keyword : - *Social Media , Blockchain, Ethereum, Solidity, Smart Contract, Meta Mask.*

1. INTRODUCTION

1.1 Domain Information

Overview of Blockchain A blockchain is a growing distributed ledger that keeps a permanent record of all transactions that have taken place in a secure, chronological, and immutable way. It was conceptualized and first used in 2008 by an unknown person or group named Satoshi Appl. Sci. 2022, 12, 6567 3 of 25 Nakamoto to create the Bitcoin cryptocurrency. The primary aim is to use a cryptosystem to encrypt the sequence of bits in electronic files so as not to be tampered with. When evaluating a blockchain, the notable characteristics to consider include audibility, privacy, confidentiality, consistency, decentralization, and integrity. Blockchain technologies can be categorized into three types: Public Blockchains (anyone can join the network), Private Blockchains (the members

are chosen based on conditions), and Consortium Blockchains (semiprivate blockchains limited to a group). All three types can additionally be classified as Permission less (public Blockchain), permissioned (private Blockchain), or both (Consortium blockchain). A Blockchain network comprises several components and attributes, such as a distributed and immutable ledger, Peer-toPeer (P2P) networks, a consensus mechanism, and smart contracts.

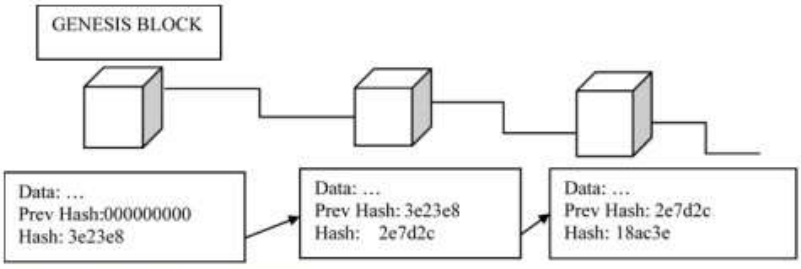

Figure 1. Illustration of block links.

1.2 Objective

- To overcome the main privacy issues in social media, fake news, and censorship.
- To achieve secure authentication while ensuring anonymity.
- To obtain transparent, immutable, and certifiable operation registry while producing a safe peer-to-peer environment for keeping and exchanging material.
- To find combating disinformation by tracing and checking the provenance of potentially perilous data.

1.3 Motivation

Privacy for user information

Since there is no third party involved, collecting and using personal information without consent is impossible. Thus eliminating data breaches, identity theft, and user commodification. **Freedom from censorship.**

Decentralized social networks offer a censor-free platform, reinstating this precious freedom. Users can freely share their opinions with a chosen audience without fear of any blocking or personal risk.

Enhanced security

With blockchain, users can control feeds without letting a third party decide for them. Also, their data is stored in a decentralized network of servers that outside sources cannot access without authentication.

Opportunity for fundraising

With the improved process and targeted control, users can undertake crowdfunding campaigns through which they can directly take peer-to-peer transactions to raise funds.

Increase social commerce

Blockchain in social media is nurturing in social commerce. This means even aspiring content creators can be rewarded with the native cryptocurrency.

2. PROBLEM DEFINATION AND SCOPE

2.1 Problem Definition

In recent years, major social media has been frequently plagued by privacy abuse and data breaches scandals. Facebook has been accused of selling or abusing user data in 2018, leading to identity theft and other related issues.

As a result, Facebook lost over $120 billion in market cap. The event has intensified distrust of centralized OSNs. In a word, the privacy issues become a major problem that should be resolved for the existing centralized OSNs, which have prompted researchers to consider the decentralization framework for online social networks.

2.2 Scope of Work

Decentralized social networks have the potential to provide a better environment within which users can have more control over their privacy, and the ownership and dissemination of their information.

2.3 Technologies and associated platform

Blockchain is considered as a ground-breaking disruptive technology which is able to change human life greatly. It is the underlying technology of Bitcoin, the first implementation of cryptocurrency. The origin design of blockchain was first described in a self-published paper for Bitcoin by Satoshi Nakamoto in October 2008. As mentioned above, blockchain is the basis of our proposed social networking architecture. Before presenting our architecture, it is necessary to introduce this technology.

2.3 Hardware Requirement

- Personal Computer
- Ram 4 GB/ 8 GB
- GPU

2.4 Software Requirement

- React Native
- EVM(Ethereum Virtual Machine)
- Visual Studio code

3. Requirement Analysis

3.1 Design Requirement

Ganache -

Ganache is a personal blockchain for rapid Ethereum and Corda distributed application development. You can use Ganache across the entire development cycle; enabling you to develop, deploy, and test your dApps in a safe and deterministic environment.
Ganache comes in two flavors: a UI and CLI. Ganache UI is a desktop application supporting both Ethereum and Corda technology. Our more robust command-line tool, ganache, is available for Ethereum development. It offers:

- console.log in Solidity
- Zero-config Mainnet and testnet forking
- Fork any Ethereum network without waiting to sync
- Ethereum JSON-RPC support
- Snapshot/revert state
- Mine blocks instantly, on demand, or at an interval
- Fast-forward time
- Impersonate any account (no private keys required!)
- Listens for JSON-RPC 2.0 requests over HTTP/WebSockets
- Programmatic use in Node.js
- Pending Transactions

Truffle

A world class development environment, testing framework and asset pipeline for blockchains using the Ethereum Virtual Machine (EVM), aiming to make life as a developer easier. With Truffle, you get:

- Built-in smart contract compilation, linking, deployment and binary management.
- Advanced debugging with breakpoints, variable analysis, and step functionality.
- Deployments and transactions through MetaMask to protect your mnemonic.
- External script runner that executes scripts within a Truffle environment.
- Interactive console for direct contract communication.
- Automated contract testing for rapid development.
- Scriptable, extensible deployment & migrations framework.
- Network management for deploying to any number of public & private networks.
- Package management with NPM, using the ERC190 standard.
- Configurable build pipeline with support for tight integration.

MetaMask

MetaMask is a software cryptocurrency wallet used to interact with the Ethereum blockchain. It allows users to access their Ethereum wallet through a browser extension or mobile app, which can then be used to interact with decentralized applications.

4. SYSTEM ARCHITECTURE

4.1 Architecture

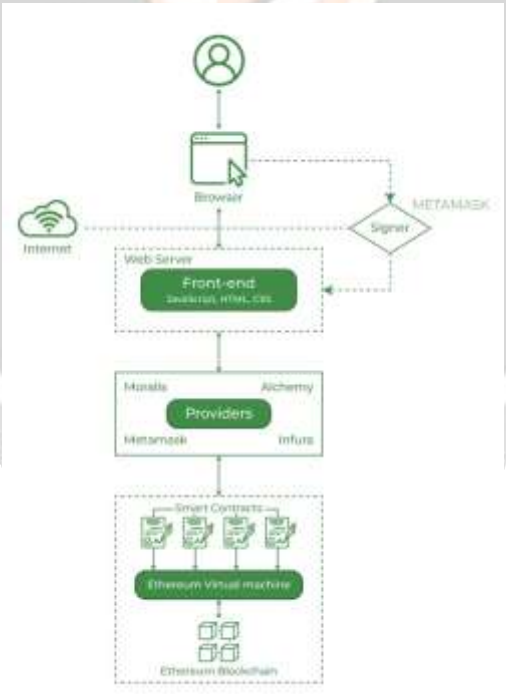

Fig: Architecture

4.2 Activity Diagram

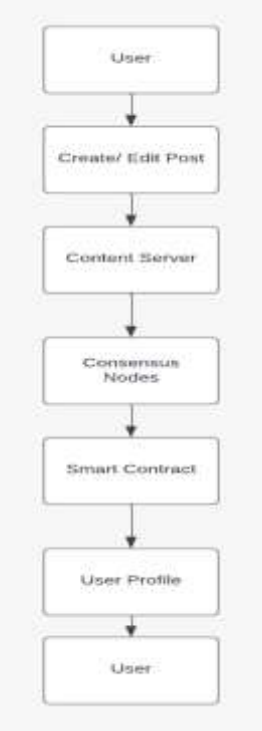

Fig: Activity Diagram

User Client: This represents the user-facing interface, such as a mobile app or web application, through which users interact with the social media platform. It provides features for creating posts, commenting, liking, and following other users.

Blockchain: The core technology powering the social media platform. It is a decentralized and distributed ledger that stores all the transactions and content data. The blockchain ensures transparency, immutability, and security of the social media platform. It consists of multiple interconnected components:

a. Content Servers: These servers store and distribute various types of content, such as posts, images, videos, and user-generated media. They are responsible for ensuring the availability and efficient retrieval of content across the platform.

b. Consensus Nodes: These nodes form the network of participants that collectively maintain the blockchain. They validate and confirm transactions, create new blocks, and maintain the integrity and consistency of the blockchain. Consensus algorithms, such as Proof of Work (PoW) or Proof of Stake (PoS), are employed to achieve agreement among the nodes.

c. Smart Contracts: These are self-executing contracts stored on the blockchain that define the rules and logic of the social media platform. They automate certain operations, such as content moderation, user verification, and reward systems, based on predefined conditions and triggers.

User Profiles: This component manages user information, profiles, preferences, and connections. It stores user data in a decentralized manner, ensuring privacy and ownership by the users themselves.

This architecture leverages the blockchain's features to enhance security, data integrity, and user control in a social media platform. It provides a transparent and decentralized environment where users can interact and share content while maintaining their privacy and ownership of data

5. CONCLUSION

In conclusion, integrating the Ethereum blockchain into a social media project offers numerous benefits. Ethereum's smart contracts automate operations, decentralized infrastructure ensures user control and privacy, and tokenization and decentralized governance provide incentives and community participation. However, challenges include

scalability, transaction costs, and regulatory compliance. Overall, Ethereum-powered social media platforms offer transparency, security, and meaningful user interactions.

6. REFERENCES

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