

**DECENTRALISED SOCIAL MEDIA APPLICATION****Arjun H. L.*, Priyanka H. L., Suvidh Jain H. R., Rakshitha H. A. and Anvika H. L.**

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Article Received on 15/03/2024

Article Revised on 05/04/2024

Article Accepted on 25/04/2024

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Science & Engineering,
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Engineering Hassan.**ABSTRACT**

As The proposed project introduces a groundbreaking social media application founded on decentralized principles, aiming to disrupt the conventional centralized model prevalent in contemporary platforms. Leveraging blockchain technology, the application prioritizes user autonomy and data privacy by eschewing reliance on third-party intermediaries for data storage and manipulation. In addition to its decentralized architecture, the platform implements an innovative revenue-sharing model, channelling a significant portion of ad revenue

directly to content creators based on the engagement generated by their posts. By empowering users with control over their data and rewarding creators for their contributions, the platform seeks to cultivate a more equitable and transparent digital ecosystem. This paper outlines the design, implementation, and testing of the decentralized social media application, highlighting its potential to redefine the relationship between users, content creators, and the platforms they inhabit. Through its decentralized infrastructure and emphasis on user empowerment, the project endeavours to pave the way for a more democratic and inclusive social media landscape.

KEYWORDS: Decentralized social media, Blockchain technology, Revenue-sharing model, User empowerment, Transparent digital ecosystem.

I. INTRODUCTION

In the ever-evolving landscape of technology and digital interactions, the concept of decentralization has emerged as a powerful force reshaping the way we perceive and engage with applications. With each passing day, decentralized applications (DApps) are garnering

increasing attention and relevance, particularly among newer generations who prioritize autonomy, transparency, and fairness in their online experiences. Central to the allure of decentralization is the immutable nature of data stored on blockchain networks, a feature that not only ensures the integrity and security of information but also affords users unprecedented control over their personal data.

Unlike their centralized counterparts, where algorithms often dictate the content users see, decentralized applications empower individuals to curate their digital experiences, enabling them to access a diverse array of opinions, perspectives, and content. In a decentralized ecosystem, the emphasis shifts from passive consumption to active participation, as users not only consume but also contribute to the creation and dissemination of content. This democratization of content creation and distribution fosters a more inclusive and vibrant digital community, where diverse voices are heard and valued.

At the heart of our endeavour lies the development of a decentralized application that embodies these principles of autonomy, transparency, and fairness. Our application seeks to revolutionize the social media landscape by providing users with a platform where they not only have ownership of their data but also have the freedom to explore and engage with a wide range of content and viewpoints. Central to our vision is the belief that users should be rewarded for their contributions to the platform, particularly those who create engaging and compelling content.

To this end, our application implements a unique revenue-sharing model that ensures content creators receive a fair share of advertising revenue generated on the platform. By directly compensating creators based on the engagement their content generates, we incentivize the production of high-quality and engaging content, thereby enriching the overall user experience. Furthermore, we extend this ethos of fairness to the loyal followers and supporters of creators, rewarding them for their engagement and participation in the platform's community.

Through the fusion of decentralization, user empowerment, and fair compensation, our application represents a paradigm shift in the way social media operates. By placing control back into the hands of users and fostering a more equitable distribution of value, we aim to create a digital ecosystem that not only reflects the values and aspirations of its users but also sets a new standard for the future of online interaction.

II. MOTIVATION

Our motivation stems from a fundamental recognition of the shortcomings inherent in centralized systems, particularly within the realm of social media. Centralization breeds a host of issues, from data privacy concerns to opaque algorithms dictating user experiences. However, one of the most glaring injustices is the inequitable distribution of ad revenue, where content creators, despite driving significant user engagement and platform growth, often receive only a fraction of the profits. This disparity not only undermines the creative efforts of content creators but also perpetuates a cycle of exploitation and disempowerment. By decentralizing the social media landscape, we aim to address these systemic inequalities head-on. Our platform is designed to prioritize the fair compensation of creators, ensuring that they receive a rightful share of the ad revenue generated by their content. Through a decentralized framework, we empower creators to reclaim control over their work and financial destinies, fostering a more sustainable and equitable ecosystem where innovation thrives, and creativity is duly rewarded.

III. LITERATURE SURVEY

Analysing social media research on decentralization provides valuable insights into diverse blockchain technologies, shedding light on innovative approaches and informing the evolving landscape of decentralized platforms. The Bitcoin whitepaper advocates for decentralization by introducing a peer-to-peer electronic cash system. Decentralized consensus, achieved through a proof-of-work mechanism, eliminates the need for intermediaries, ensuring trust, security, and censorship resistance in financial transactions.^[1] The Ethereum whitepaper, authored by Vitalik Buterin, introduces a decentralized platform for smart contracts and decentralized applications (DApps). It outlines Ethereum's design principles, vision, and the Ethereum Virtual Machine (EVM).^[2] The Ethereum yellow paper, authored by Dr. Gavin Wood, delves into the technical specifications of Ethereum, providing a formal and detailed description of the Ethereum protocol, consensus mechanisms, and the functioning of the EVM. It serves as a comprehensive reference for developers and researchers understanding the intricacies of Ethereum's implementation.^[3] This paper proposes a blockchain-based authentication model which addresses the issue of personal information security by employing a decentralized platform, blockchain, and user-specific encryption. The implementation using Ethereum and MetaMask demonstrates its feasibility, and the potential benefits extend to service providers, reducing costs and enhancing efficiency.^[4] BCOSN, a decentralized OSN framework utilizing blockchain and smart contracts to replace central servers in traditional

OSNs. BCOSN provides efficient and secure 6 features, including authentication and friend recommendations. The study validates the framework's effectiveness through experimental results, emphasizing its focus on social graph layers with fundamental features, albeit operating as an unfamiliar and less efficient Distributed OSN (DOSN).^[5] This study presents a blockchain-based data storage framework for Twitter, diminishing dependence on centralized repositories. It utilizes public blockchain, Ganache, MetaMask, Truffle, and Ethereum IDE for contract deployment and stores file metadata on the blockchain, facilitating peer-to-peer transactions on networks like Ropsten and Rinkeby.^[6] This paper aims to establish a resilient and decentralized social network service, guarding against centralized service outages. Through a DAO (Decentralized Autonomous Organisation), all users gain autonomy in managing the social network, fostering sustainable growth without reliance on a central leader. The blockchain enhances this decentralization for user-controlled network management.^[7]

IV. IMPLEMENTATION

The implementation of our decentralized social media application revolves around leveraging the Ethereum network, utilizing Solidity as the primary programming language, and Ether (ETH) as the native currency. The frontend of the application is built using React, supplemented by various UI libraries to enhance user experience. Additionally, we employ development tools such as Hardhat and Ethers to streamline the development process and ensure the robustness of our application.

At the core of our application are the functionalities that empower users to interact with the platform and participate in the content creation process. Users have the ability to create posts, share their thoughts, and contribute to the platform's content ecosystem. Furthermore, they can engage with posts by commenting and liking, fostering a sense of community and interaction among users.

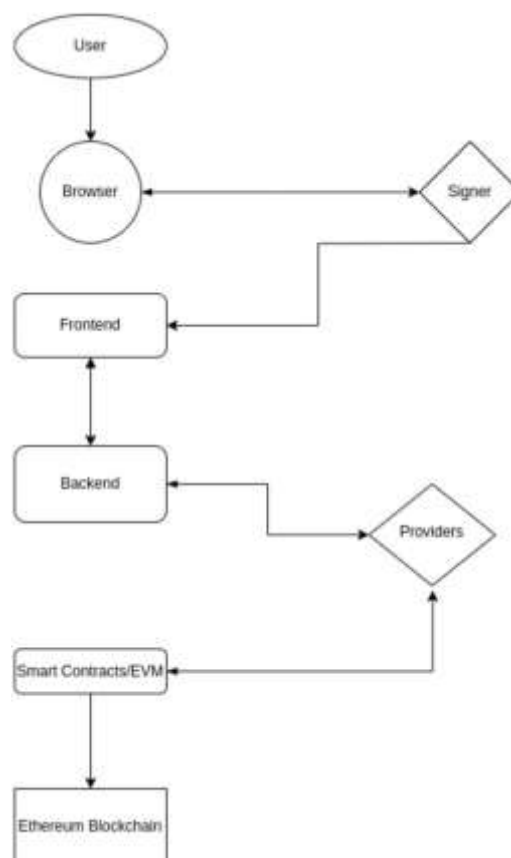
One of the key features of our application is the integration of an advertisement system that enables users to monetize their content. Through a user-friendly interface, creators can seamlessly add advertisements to their posts, specifying parameters such as the duration and frequency of ad displays. For instance, creators may choose to charge a nominal fee, such as 0.0001 ETH, for each render of the advertisement.

Crucially, our revenue-sharing mechanism ensures that creators receive a fair and

proportional share of the ad revenue generated by their content. When an advertisement is rendered, 70% of the revenue generated is allocated to the creator of the post, serving as a direct reward for their contributions. The remaining 30% is distributed among loyal users who engage with the content, fostering a sense of loyalty and incentivizing active participation within the community.

To facilitate seamless transactions and ensure transparency, users have the flexibility to withdraw their accumulated revenue at any point in time. This empowers creators to monetize their content according to their own preferences and financial needs, reinforcing the ethos of autonomy and empowerment central to our platform.

In summary, our implementation of a decentralized social media application on the Ethereum network represents a paradigm shift in the way content creation and monetization are approached. By leveraging blockchain technology and smart contracts, we aim to democratize the social media landscape, empowering users to take control of their data, monetize their content, and participate in a fair and transparent digital ecosystem.



3.1. System workflow.

Implementation Overview

In crafting our social platform, we've meticulously designed each aspect to seamlessly integrate blockchain technology with user-friendly interfaces. Leveraging React for the frontend ensures a responsive and dynamic user experience, while ethers.js facilitates smooth interaction with smart contracts. Hardhat streamlines smart contract development and deployment, with Sepolia serving as our designated test network for experimentation and validation.

Social Features

At the core of our platform are Posts, encapsulating headlines, images, and content sections. The scrollable feed tantalizes users with headline previews and images, enticing further exploration. To unlock the full content experience, users initiate transactions involving negligible gas fees, promoting engagement and value exchange.

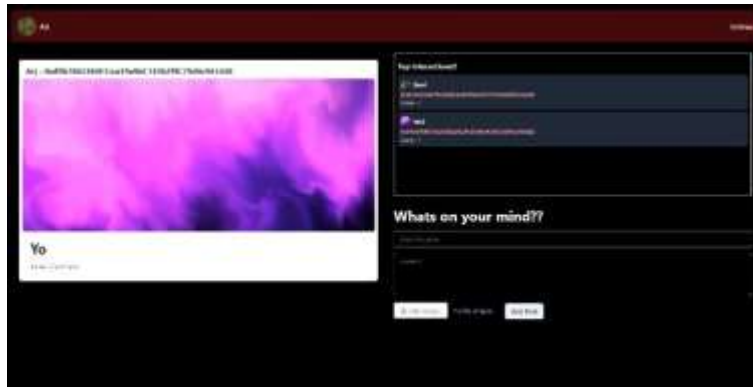
Monetization and Engagement

Integral to our platform's sustainability is a robust monetization model. Posts seamlessly integrate advertisements, with revenue distribution finely tuned to incentivize creators and foster community growth. Upon post interaction, a fair distribution model allocates 50% of ad revenue to the post Creator Funds and Interaction Leaderboard.

Empowering creators with financial incentives are pivotal to our ethos. Creator funds provide a mechanism for users to distribute rewards among creators and top interactors, fostering a culture of appreciation and reciprocity. Interaction points serve as a tangible measure of engagement, awarded for actions such as opening a post (+1), liking a post (+2), and commenting (+3). The interaction leaderboard serves as a visual representation of user engagement, facilitating strategic support allocation.

User Interface Components

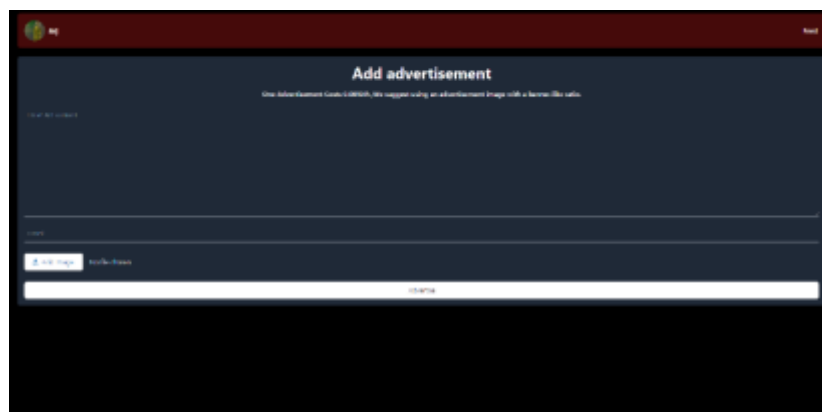
Feed Interface: Our feed interface is the heartbeat of the platform, offering a dynamic space for content discovery and engagement. The inclusion of an interaction leaderboard provides users with insights into community dynamics, fostering a sense of belonging and recognition.



Settings Screen: The settings screen serves as a control centre for users, providing access to essential functionalities such as advertising, creator fund management, and owner reward withdrawal. By centralizing these features, we empower users to customize their experience and maximize their impact within the platform.



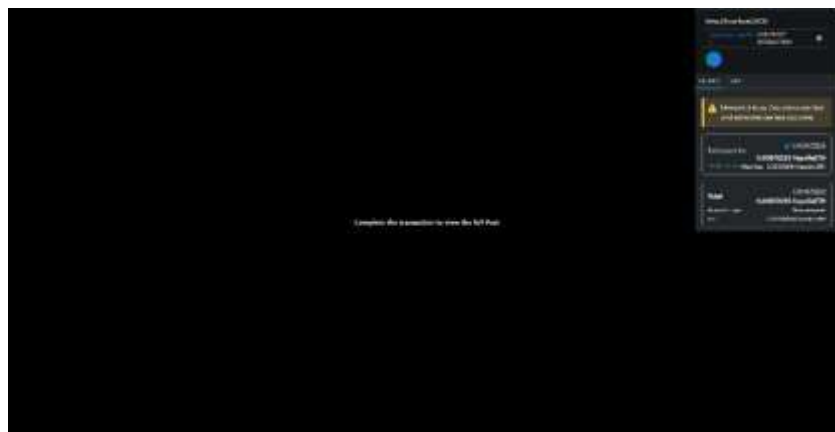
Advertise Screen: Our advertise screen streamlines the ad creation process, allowing advertisers to input ad content and determine its frequency of display to users. By offering advertisers transparent and customizable advertising options, we enhance monetization opportunities while maintaining user engagement.



Detailed Post Screen: Delving deeper into post content, the detailed post screen provides users with a comprehensive viewing experience. Rendered advertisements seamlessly integrate with post content, ensuring a non-intrusive yet effective monetization strategy.



To explore the content users, need to complete the transaction.



CONCLUSION

In conclusion, our social platform represents the convergence of blockchain technology, user-centric design, and sustainable monetization models. By prioritizing creator empowerment, community engagement, and user experience, we've crafted a platform that not only fosters creativity and expression but also rewards contributors fairly. As we continue to refine and expand our platform, we remain committed to our vision of a decentralized ecosystem where creators thrive and users are valued.

V ACKNOWLEDGEMENT

This paper wouldn't have been done without the support and availability of Ethereum as an open source blockchain which was made available by Vitalik Buterin.

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