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# A Review on “IPFS Based Decentralized Social Media Platform”

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### Abstract:

Decentralized social media is a relatively new concept that aims to address issues related to censorship, privacy, and data ownership. Unlike traditional social media platforms, decentralized social media allows users to connect and communicate directly without the need for intermediaries or centralized control. This paper provides an overview of the current state of decentralized social media, including its history, architecture, and key features. It also discusses the advantages and challenges associated with decentralized social media and examines the potential implications of this technology for users, businesses, and society at large.

**Keywords:** Ethereum, Decentralized, IPFS, Social Media

### Introduction:

Social media has become an integral part of our daily lives, with billions of people using it to connect, share information, and express themselves. However, centralized social media networks like Facebook and Twitter have been criticized for their control over users' data, privacy concerns, and censorship. Decentralized social media networks have emerged as a potential solution to address these issues. Online social networks (OSNs) are widely used for social interactions, sharing information, and content creation. However, centralized OSNs have significant drawbacks, such as privacy concerns and control of user-generated data. Decentralized Online Social Networks (DOSNs) offer an alternative approach that ensures data privacy and ownership. In this paper, we review existing approaches to decentralize the way internet users socialize digitally. In a decentralized social media network, the data is not stored on a central server but rather distributed across a network of computers. This approach

offers benefits like increased privacy, data ownership, and censorship resistance. In this paper, we review the literature on decentralized social media networks and discuss various approaches for building such networks. Decentralized social media is a new concept that has gained popularity in recent years. It is a type of social media that operates on a decentralized network, which means that it does not rely on a central authority to control its activities. Decentralized social media platforms use blockchain technology, which enables users to have control over their data and information. The emergence of decentralized social media can be attributed to the increasing concerns over data privacy and security. With the centralized model of social media, users are required to share their personal information with a central authority, which can use it for various purposes, including advertising and data analysis. Decentralized social media, on the other hand, enables users to own their data and control how it is used.

One of the main benefits of decentralized social media is the increased privacy and security it provides. Since users own their data, they can decide who has access to it and how it is used. This reduces the risk of data breaches and hacks, which are common in centralized social media platforms. Additionally, decentralized social media can prevent censorship and ensure freedom of expression. With a decentralized network, there is no central authority to control what content is shared, which means that users can freely express themselves without fear of censorship. Decentralized social media is the potential for more equitable distribution of value. In centralized social media platforms, the central authority owns and controls the data and information shared by users. This means that users do not benefit from the value generated by their content. Decentralized social media, however, enables users to monetize their content and receive rewards for their contributions. This can lead to a more equitable distribution of value and a more democratic system. Despite the benefits of decentralized social media, there are also challenges and limitations. One of the main challenges is the lack of adoption and awareness. Decentralized social media is still a relatively new concept, and many people are not familiar with it. This can make it difficult to attract users and build a sustainable community. Additionally, the technical complexity of blockchain technology can be a barrier to entry for some users. Challenge of decentralized social media is the potential for abuse and misuse. Since there is no central authority to regulate content, decentralized social media platforms can be used to spread misinformation, hate speech, and other harmful content. This can lead to the spread of false information and the creation of echo chambers, where users are only exposed to content that reinforces their existing beliefs.

### **Literature Survey:**

Hrishikesh Bawane[1] and others highlighted the shortcomings of central OSN such as data security, content analysis and data availability. Trustworthy. The language does not support complex data structures such as multidimensional arrays. The application is only made as a web application, and there is a function to create a mobile application without interrupting the OSN operation.

In [2] Quanqing Xu and others experimented on social media platforms. Here they created an Ethereum-based social media platform. Small data will be stored on Ethereum using smart contracts. Since Solidity didn't have at the time to support the return of complex files like structs, they created a file system (IPFS) to store the larger file. The application consists of front-end web pages where the user will interact with the system.

One of the earlier works on social media is the paper by [3] Yash Ranka, Jainam Bagrecha, Kavish Gandhi, Bhargav Sarvaria, Prof. P. M. Chawan named “A Survey on File Storage & Retrieval using Blockchain Technology” which aims to solve the problems of decentralized data storage, limiting data access and preventing data redundancy using peer-to-peer network storage combined with blockchain technology. The proposed technology stack for this includes the Ethereum [9] swarm [10] for storing, distributing and storing data across the network, the Ethereum whisper [11] protocol for host information sharing access, and various Asymmetric encryption. algorithm and data compression algorithm for managing confidential information and for recording information.

In [4] Keyur Paralkar et al., Photogroup, a decentralized photo-sharing social media platform, uses the Ethereum platform to collect files. The system uses Ganache to launch the Ethereum client. The system is built using the Truffle framework. System allows users to view, share, like and comment on images shared by users. Here each user has to be a part of the blockchain and when the user creates an account in this system new blocks are created for each user. Each user block will contain the data of block and the data of the previous block. The system uses IPFS technology to transfer data from local storage to the blockchain using Ethereum smart contracts.

In the literature, research publication and peer review methods have been distributed [5], [6]. The article uses the Ethereum blockchain and IPFS to provide an effectively distributed system for publishing and analyzing scientific data. This improves transparency, traceability and open access to prior techniques.

[8] Leila Bahri et al. Central OSNs and DOSNs are compared. They talk about online privacy and offline privacy. Online privacy refers to providing access control. Offline privacy means protection from metadata analysis, user data mining and marketing targeting. They claim that OSN mainly provides online privacy while DOSN provides offline privacy. They announced 2 ways to get the distribution. One way is to have separate, separate organization servers. Users can then join one of the federated servers and switch between different servers without losing any user data. Another way is for to use peer communication to be truly honest. They propose to distribute the data to nodes that are authorized to access the data. They conclude the article by stating that while DOSN can resolve some privacy concerns from centralized OSNs, introduces new problems and challenges such as instant messaging and real-time information sharing.

[9] Van-Duy Pham et al. Compare centralized and decentralized storage systems. The 's main focus is on the deficiencies of the central system, such as points of failure and privacy concerns. The author proposes storage areas to overcome the shortcomings of the central system, new systems are intended to be secure and transparent. They combined the IPFS, ABE, MA-ABE and Ethereum blockchain to demonstrate the security and transparency of the components of the decentralized system

In [10] Koushik Bhargav Muthe, et al. highlighted the headaches within the contemporary internet structure, it especially points out that only a few companies manipulate maximum of the records at the internet. in addition, they point out the results of this sort of device along with statistics manipulation, lack of privacy and information misuse. It proposes a brand new architecture in which it's far focused on a fully relaxed and decentralized network. It uses technology inclusive of IPFS, Peer-to-peer, Ethereum and clever contracts. The proposed structure also makes use of zero understanding proofs and proxy re-encryption mechanism for privacy of the nodes inside the community.

In addition to academic research, there are also several decentralized social media platforms that have gained popularity in recent years, such as Mastodon, Scuttlebutt, and Peer tube. These platforms offer users a decentralized alternative to traditional social media platforms like Facebook and Twitter, and are designed to be more privacy-focused and user-centric.

### **Related Work:**

Based on the existing research and literature review[11], there are several areas for potential future work in the field of decentralized social media.

Development of more advanced decentralized social media platforms[12]: While there are already some decentralized social media platforms available, there is still room for improvement and innovation in terms of usability, features, and scalability.

Study of user behaviour on decentralized social media: As the user base of decentralized social media platforms grows, it would be interesting to conduct studies on user behaviour, preferences, and motivations for using these platforms.

Investigation of the impact of decentralized social media on society: It would be useful to study the impact of decentralized social media on various aspects of society such as political discourse, social activism, and privacy.

Exploration of alternative decentralized social media architectures: While blockchain technology is currently the most commonly used architecture for decentralized social media, there may be other alternative architectures that could be explored and developed.

Analysis of legal and regulatory issues surrounding decentralized social media: As decentralized social media continues to gain popularity, there may be legal and regulatory issues that arise that need to be addressed.

### **Conclusion:**

In conclusion, decentralized social media is a rapidly evolving field with immense potential to transform the way we interact online. By removing the centralized control of traditional social media platforms, decentralization can empower users with greater privacy, security, and control over their data. However, as with any new technology, there are also potential challenges and risks that must be carefully considered and addressed. Through our literature review and survey, we have identified several key themes and areas of research in this field, including the need for robust decentralized infrastructure, the importance of user adoption and incentivization, and the potential for decentralized social media to support marginalized communities and amplify diverse voices. Moving forward, there is a need for further research and development to address the technical, social, and political challenges of decentralized social media. This includes exploring new decentralized architectures, designing effective governance models, and developing user-friendly interfaces that can support widespread adoption. Additionally, there is a need for greater public awareness and education around the benefits and risks of decentralized social media, to ensure that users can make informed decisions about their online behaviour. Overall, we believe that decentralized social media holds great promise as a more democratic, secure, and equitable alternative to centralized social media platforms. By working together to address the challenges and opportunities of this emerging field, we can create a more vibrant and inclusive digital ecosystem for all.

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