Decentralized Crowdfunding Platform: Empowering Global Fundraising with Blockchain Technology

Mannem Sirivalli[1], Mohammed Zaid[2], Afeefa Aref[3], Dr. Diana Moses[4]

Student, Department of Artificial Intelligence & Data Science, Methodist College of Engineering & Technology, Hyderabad, Telangana, India [1 2 3]

Associate Professor, Department of Computer Science Engineering, Methodist College of Engineering & Technology, Hyderabad, Telangana, India [4]

Abstract Crowdfunding is a proven way to support startups and social projects; nevertheless, conventional crowdfunding platforms are based on centralized architecture, which brings problems like poor transparency, excessive transaction costs, and low level of control over the usage of money. In this paper, a decentralized crowdfunding solution that will solve the described problems will be presented. Blockchain technology is applied to implement the platform through the usage of Ethereum smart contracts, thus providing safe and transparent transactions. The users will be able to launch a campaign, make payments, and control their transactions via MetaMask extension. Milestone-based funding will be used as well to monitor the spending of money properly. Frontend of the project will be designed using React.js and Web3.js. Experimental results show significant advantages of the proposed solution such as improved transparency, reduced dependence on third parties, and increased trust between people.

Keywords: Blockchain,Crowdfunding, Ethereum, Smart Contracts, Web3.js, React,js

1. Introduction

Crowdfunding has emerged as an important and popular way of raising funds in the modern digital age. It helps individuals and organizations to raise financial contributions from numerous individuals. Thus, it helps in the realization of innovative ideas. The increasing popularity of the digital age and the use of the internet and digital financial systems have contributed significantly to the rapid growth of crowdfunding in the past few years.

Currently, the crowdfunding platforms that are in place have several issues. The majority of the crowdfunding systems in place are based on the centralized approach. In this approach, there is an entity that oversees the process. In our comprehension of the term, this approach has several issues. The first issue is that the donors do not get the required transparency with regard to the utilization of the funds after they donate. The second issue is that the majority of the crowdfunding platforms incur high charges. This has the effect of reducing the amount that the creator receives. The third issue is that there is usually a delay in the process. The approach is also prone to fraud.

Blockchain technology offers a promising solution to these problems. Blockchain technology utilizes a distributed and immutable ledger system, where all transactions are recorded and stored. Once a transaction is stored, it cannot be altered or deleted. It helps maintain transparency and integrity. One of the most important features of blockchain technology is the utilization of smart contracts. Smart contracts are a set of programs that execute certain actions automatically. For instance, money can be released once certain milestones are met. In this way, transactions are carried out in a more secure, transparent, and reliable manner. Studies have also shown that blockchain enhances transparency, eliminates fraud, and allows the user to track how the contribution is being utilized .

The primary objective of this project is to overcome the limitations of traditional crowdfunding platforms. To do this, a new and efficient decentralized platform will be designed. In this project, blockchain technology, smart contracts, and Web3 are utilized to create a safe environment for crowdfunding. The proposed system helps manage funds in a fair manner and builds user confidence. The proposed system is efficient, transparent, and free from any trust constraints.

2. Literature Survey

Anand Babu et al. (2025) proposed a smart contract-based crowdfunding system using Web3 technology. In their proposal, trustless and transparent fundraising is achieved. However, it lacks analysis of its practical deployment and performance in real-world scenarios. [1]

Menon et al. (2023) proposed a decentralized crowdfunding platform using blockchain technology. In their proposal, trust among users is achieved. However, it lacks practical implementation and scalability analysis. [2]

Tanise et al. (2024) proposed a reliable and secure crowdfunding platform using blockchain technology. In their proposal, trust among users is achieved. However, it lacks practical implementation and scalability analysis. [3]

Nayak et al. (2023) proposed a decentralized charity funding system using blockchain technology. In their proposal, transparency in charity funding is achieved. However, it lacks analysis of practical implementation challenges. [4]

Tyagi et al. (2025) proposed a blockchain-based crowdfunding platform using smart contracts in Ethereum. In their proposal, trust among users is achieved. However, it lacks analysis of its practical implementation in large-scale scenarios. [5]

Zamare et al. (2024) proposed a decentralized crowdfunding framework using blockchain technology. In their proposal, trust among users is achieved. However, it lacks practical implementation. [6]

Sudheeran et al. (2025) proposed a decentralized charity portal using blockchain technology. In their proposal, traceability of funds is achieved. However, it lacks practical implementation. [7]

Kumar et al. (2024) proposed a decentralized crowdfunding application using blockchain technology for transparent and secured transactions. However, this study does not include detailed testing and performance evaluation of the proposed system. [8]

Temsen et al. (2023) proposed a DAO-based crowdsourcing fund system using blockchain technology for decentralized decision-making. Although this approach helps in community-based decision-making, there are no detailed discussions on the practical implementation and adoption of the proposed system. [9]

Antad et al. (2024) proposed a smart contract-based crowdfunding system using AI for efficient decision-making and fraud detection. Although this system uses a unique approach for efficient decision-making, there are no discussions on practical implementation and performance evaluation of the proposed system. [10]

Hegde et al. (2024) proposed a blockchain-based crowdfunding system using Ethereum blockchain and MetaMask for secured transactions. Although this system focuses on practical implementation, there are no discussions on scalability and gas costs. [11]

Narender et al. (2025) proposed a secured blockchain-based crowdfunding system for fraud prevention. Although this system focuses on security, there are no discussions on practical evaluation of the proposed system. [12]

Hashemi et al. (2024) proposed a systematic review of blockchain-based fundraising for SMEs and discussed the advantages of blockchain-based fundraising for SMEs. Although this study focuses on the advantages of blockchain-based fundraising, there are no discussions on practical implementation. [13]

Arul Prakash et al. (2025) proposed a blockchain-based crowdfunding system for trust and security. Although this system focuses on security and trust, there are no discussions on practical evaluation of the proposed system. [14]

Siddiqui et al. (2025) proposed a decentralized system for efficient security in crowdfunding platforms using blockchain technology. Although this system focuses on security, there are no discussions on practical implementation. [15]

Nakamoto (2008) presented Bitcoin, an innovative peer-to-peer electronic cash system. This provided the basis for developing and implementing decentralized and trustless systems. However, it is not particularly suitable for crowdfunding applications and does not include specific components for fundraising systems [16].

Buterin (2014) presented Ethereum, an innovative blockchain technology that allows for smart contracts and applications. Although it is particularly suitable for developing crowdfunding systems, it also presents specific problems, including scalability and increased transaction costs [17].

Wood (2014) presented Ethereum's technical architecture, which provides a safe and decentralized system for transaction ledgers. However, it does not particularly address specific problems that may be associated with crowdfunding applications and governance [18].

Rene Robin et al. (2023) presented a new method for data extraction in healthcare systems using a blockchain approach during COVID-19. This indicates that blockchain technology is particularly effective in handling data and is safe. However, it is not suitable for crowdfunding applications and systems [19].

Josphineleela et al. (2023) presented a new approach for developing a secure IoT data communication system through blockchain and fuzzy optimization techniques. This indicates that blockchain is particularly effective in handling data and is safe. However, it is not suitable for crowdfunding applications and systems [20].

From the review of literature, it is now possible to understand that blockchain technology and smart contracts are particularly effective in developing and improving crowdfunding systems. This is due to the fact that blockchain technology is effective in enhancing transparency and security in crowdfunding applications. However, there are certain limitations to be addressed in order to build a more efficient and effective system. These limitations include scalability, the absence of real-time monitoring, and the limited focus on user interface.

3. Proposed Work

The proposed system is mainly targeted towards creating a decentralized crowdfunding system through the utilization of blockchain technology to create an efficient crowdfunding process. In this regard, Ethereum smart contracts are utilized within our proposed system to create an efficient crowdfunding process through the elimination of mediator involvement, thereby creating an efficient system for interacting between campaign creators and contributors. This helps in creating an efficient system where all operations can be conducted independently.

The proposed crowdfunding platform enables a user to create a campaign by providing essential information such as the campaign title, description, amount, deadline, and an image. All the information provided by the user is stored on the blockchain using smart contracts, which enables the

information to be immutable, meaning it cannot be altered once it is stored on the blockchain. Each campaign is assigned a unique ID, which enables all the users to access the campaign.

The proposed system enables contributors to browse through various campaigns and contribute to their favorite campaign by donating money using their cryptocurrency wallets, such as MetaMask. Upon making the donation, the smart contract enables the direct transfer of funds to the campaign owner without the involvement of any mediator. All the details of the transactions, including the addresses of the contributors, are stored on the blockchain, which facilitates complete transparency in the operations. Blockchain enables such P2P transactions with minimal dependency on mediators.

The basic operations of the system are performed by the smart contract. The smart contract can be created using the Solidity language. The smart contract helps in performing operations such as creating campaigns, making donations, and retrieving information from the campaigns. The smart contract works in such a manner that it performs operations automatically depending on the conditions. Therefore, it helps in performing tamper-proof transactions. Additionally, the smart contract helps in performing operations such as controlling the release of funds, which helps in avoiding the misuse of funds.

One of the most significant differences of the proposed system from the existing systems is that the proposed system does not require the presence of the central authority. The proposed system helps in reducing the transaction fees. Additionally, the proposed system does not require the verification process, which helps in avoiding the delays. Moreover, the proposed system helps in avoiding the fraud and manipulation of the information because the proposed system uses the blockchain technology.

From the above discussion, it can be concluded that the proposed crowdfunding platform is a simple, efficient, and transparent solution. The proposed system helps the users in interacting with the system and performing the operations without the help of the central authority. Therefore, the proposed system can be considered a reliable solution for the current scenario.

4. System Architecture

The proposed architecture for the decentralized crowdfunding platform, based on the layer-based concept, will involve user interactions, smart contracts, and blockchain. This type of architecture ensures that the efficiency of the system is increased because every layer in the system will be responsible for a different function. The layer-based concept has been used in blockchain technology, where different layers in the system will be used for different functions. This will enable a safe, transparent, and direct communication between the user and the system.

4.1 Overall System Architecture

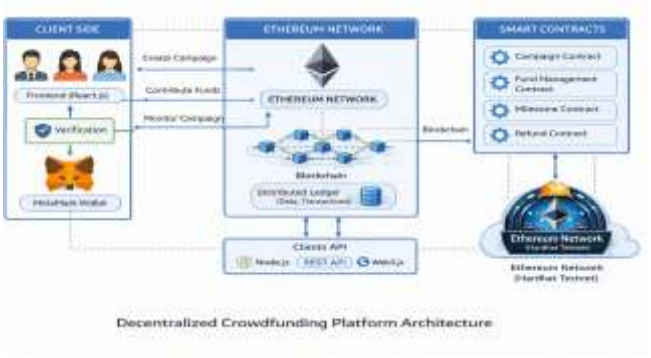

Fig 1: *Architecture*

The workflow of the system in the decentralized crowdfunding platform indicates the process of user interactions in the system. In our case, the process starts when the user wants to access the platform and uses the frontend provided by the React.js interface. In order to interact with the system, the user needs to connect the MetaMask wallet. The wallet is used as the authentication process in the system.

After the user connects the wallet, they can perform various activities such as creating a new campaign or contributing funds to the campaigns. When the user wants to create a new campaign, they can add the details such as the title of the campaign, description of the campaign, the amount they want to raise, and the deadline of the campaign. The details are sent to the Ethereum blockchain via the Web3.js interface. The details are recorded in the blockchain.

When the contributor wishes to fund a particular campaign, the request for funding is sent from the frontend, and then it is forwarded to MetaMask, requesting approval for the transaction and the fees for the transaction. Once the approval is obtained, the request for the transaction is broadcasted to the Ethereum network, where it will be validated and recorded in the blockchain ledger.

The smart contract layer, where the campaign contract, the fund management contract, the milestone contract, and the refund contract are included, will perform all the operations. Once the transaction request is confirmed, the smart contract will automatically transfer the funds to the owner of the campaign or will manage it as per the requirements based on certain conditions.

All the transactions and information are recorded in the distributed ledger, and this helps in maintaining transparency, security, and traceability. The client-side application will continuously interact with the blockchain network through API, like Node.js, REST API, and Web3.js, for fetching information from the blockchain network.

This will help in a smooth flow of information between the user interface, blockchain network, and smart contracts, which will help in a transparent, safe, and totally decentralized crowdfunding process without the involvement of any intermediary.

4.2 Blockchain Workflow

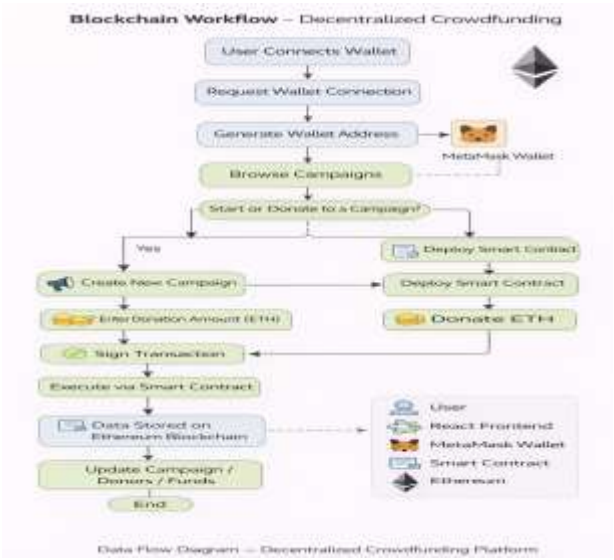

Fig 2: *Blockchain Workflow*

The blockchain workflow refers to the process by which the transaction happens in the blockchain system from the initiation of the transaction to the confirmation of the transaction. In our system, if the user wants to perform a specific task, such as creating a campaign or donating money, the request will be sent from the front-end to the smart contract. The smart contract in our system will be deployed on the blockchain.

Before the execution of the transaction, the user will be prompted by MetaMask to confirm the transaction. The confirmation of the user will be considered the digital signature. After the confirmation of the user, the system will proceed accordingly. After the confirmation of the user, the transaction request will be sent to the entire Ethereum network. The transaction request will be verified and added to the blockchain network using the consensus algorithm.

When the transaction request is added to the blockchain network, it becomes irreversible. The smart contract in our system will be able to perform the specific task by executing the specific function. The execution of the specific task in our system will be done in a transparent and decentralized manner.

4.3 Smart Contract Interaction Flow

The smart contract is the main entity which controls all the significant functionalities of the platform. In our platform, the functionalities include the creation of campaigns, the transfer of funds, and the retrieval of data.

For example, if the user wants to create a new campaign, the createCampaign() function in the smart contract is invoked. The contract stores the significant data such as the address of the owner of the campaign, the title of the campaign, the amount the owner wants to raise, and the deadline for the campaign. The data is immutable because it is stored in the blockchain.

If the user wants to donate to the campaign, the donateToCampaign() function in the contract is invoked. The user can transfer the amount they want to donate to the owner of the campaign. The user's address and the amount they donate are recorded.

Apart from the above operations, the contract has additional functions such as getCampaigns() and getDonators(). The functions allow users to get the details of the campaigns they create and the donations they make.

5. Results

The proposed decentralized crowdfunding platform has been successfully designed and implemented with the help of Ethereum blockchain and smart contract technology. In our proposed platform, users can securely create, manage, and fund their crowdfunding campaigns without depending on any central authority.

Users can simply create their crowdfunding campaign by providing some key details such as title, description, amount, deadline, and image through the frontend interface. These details are then stored securely in the blockchain with the help of smart contracts. After creating the crowdfunding campaign, it is listed in the platform, and other users can explore it.

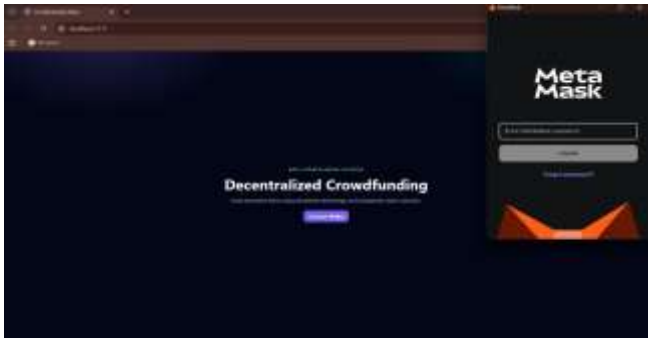

Fig 3: *Wallet Connection Interface*

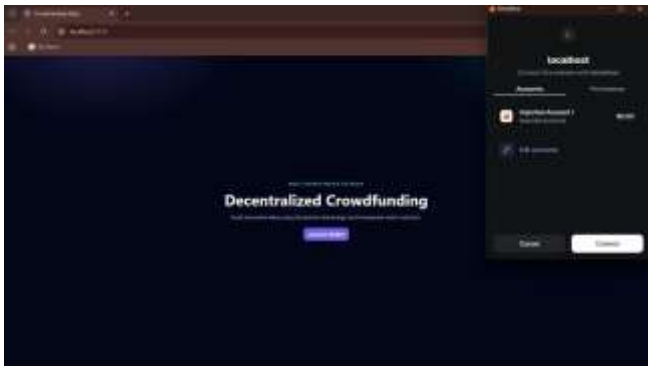

Fig 4: *MetaMask Connection Approval*

This screen shows the permission prompt from MetaMask, where the user is prompted to allow the connection of the application with their wallet. This is our authentication process in which no transaction is made without the user's permission.

Fig 5: *Campaign Creation and MetaMask Transaction*

This screen represents the process of creating a campaign, where the user is required to fill in the required fields and set the milestones for the release of funds. This screen also represents the MetaMask transaction approval screen, which is utilized to safely authenticate the transaction on the blockchain.

Fig 6: *Approved Campaigns and Donation Tracking*

This screen displays the approved campaigns along with the funding progress, defined milestones, and the contributions made by the donors. In the system we are proposing, users are able to view the campaigns, track the progress, and donate to the campaign.

Fig 7: *Admin Dashboard and Campaign Review Panel*

This screen displays the admin dashboard where all the campaigns are arranged in the categories of pending, approved, and rejected. In this system, the admin can check all the information of the campaign and approve the campaign so that only valid information is displayed.

6.Discussions

The effectiveness of our proposed decentralized crowdfunding platform can be seen through its noticeable improvement compared to conventional systems in dealing with some of the main challenges facing crowdfunding. These challenges include a lack of transparency, centralization, and misuse of funds. In our proposed system, we can see how blockchain technology plays an important role in dealing with these challenges.

In conventional crowdfunding systems, it is common for contributors to feel uninformed about how their money is being used after donating. In our proposed system, we have ensured transparency in the sense that every transaction is recorded in a public ledger called blockchain. All the details of the campaign, donation, and transaction are recorded in the Ethereum blockchain, which is accessible to every user. For example, details such as donor identity and donation amount can be verified at any time, ensuring maximum transparency.

Another main problem with conventional crowdfunding systems is that these systems are dependent on some authority to manage the campaign and transaction process. In our proposed system, we have ensured maximum elimination of such problems. In our proposed system, we have used smart contracts of Ethereum to automate all the main activities of the crowdfunding platform. In addition, users can interact with the blockchain through MetaMask, which enables peer-to-peer transaction without any intermediate. This minimizes delays in the process.

The misuse of funds is also an issue in the conventional crowdfunding model due to the lack of proper monitoring. This issue is resolved in our proposed model by using smart contracts for executing the transactions. After making the donation, it is executed in a secure manner, and the donation is permanently stored in the blockchain. Hence, there is no possibility of altering the donation amount. Moreover, due to the direct transfer of funds from the contributors to the campaign owner, there is less chance of misuse.

The proposed system is a secure, transparent, and decentralized crowdfunding platform. The proposed system can be used by users to raise funds for their campaigns in an efficient manner. Moreover, the proposed system can be used for making donations in a secure manner. The proposed system can be used for crowdfunding in a decentralized manner, which is transparent and secure due to the use of MetaMask for authentication purposes and the Ethereum blockchain for maintaining the integrity of the data. Though there are some issues with the proposed system, such as the chances of network congestion and the payment of fees, the proposed system can be used in an efficient manner compared to the conventional system.

7. Conclusion

This paper attempts to address the key limitations associated with crowdfunding platforms, which include issues like transparency, centralization, transaction costs, and fund misuse. In our proposed system, these limitations are effectively addressed through our approach, which is based on a blockchain technology platform.

Our proposed crowdfunding platform is based on Ethereum technology and uses smart contracts for facilitating transactions in a transparent manner without the intervention of any third party. The information related to the campaign and history of donations are recorded in the blockchain. This

will increase the overall trust factor between campaign creators and fund raisers.

Our proposed crowdfunding platform facilitates the release of funds based on milestones. This will increase the overall efficiency of fund utilization.

Our proposed crowdfunding platform uses MetaMask for user authentication as well as for approving transactions. Moreover, our proposed crowdfunding platform is based on a decentralized approach. This will increase overall efficiency as there will be no delays in transaction processing. This will also decrease overall transactional costs.

Our proposed crowdfunding platform eliminates fraud risks as transactions are automatically executed between parties.

As per our results, our proposed crowdfunding platform can be used for crowdfunding activities in a reliable manner. Moreover, our proposed crowdfunding platform is more secured compared to other crowdfunding platforms. Our proposed crowdfunding platform facilitates peer-to-peer interactions as well as trust independence.

Our proposed crowdfunding platform can be improved based on additional features such as supporting multiple chains as well as improving user interfaces and analytics.

8. References

[1] G. L. Anand Babu, J. Vamshidhar, K. S. Reddy, G. V. P. Yadav, and G. C. Goud, “Smart Contract-Based Crowdfunding: A Web3 Approach to Trustless Fundraising,” 2025.

[2] A. Menon, K. Kadam, P. Kumar, and S. K. Shah, “Decentralized Crowdfunding Using Blockchain,” 2023.

[3] H. Tanise, I. Ahmed, Q. D. N. Nguyen, and T. H. Tran, “A Reliable and Secure Crowdfunding Platform Using Decentralized Blockchain,” 2024.

[4] V. Nayak et al., “Decentralized Charity Funding Using Blockchain Technology,” 2023.

[5] M. Tyagi, O. Tiwari, P. Gupta, and P. Chauhan, “Blockchain-Based Crowdfunding Using Smart Contracts on Ethereum,” 2025.

[6] R. A. Zamare et al., “Decentralized Crowdfunding with Blockchain,” 2024.

[7] S. Sudheeran et al., “Decentralized Charity Portal: Transparent Fundraising Using Blockchain,” 2025.

[8] A. Kumar, S. Utekar, and V. D, “Crowdfunding Platform Using Decentralized Application (Blockchain),” 2024.

[9] G. Temsen et al., “DAO-Based Crowdsourcing Fund Using Blockchain Technology,” 2023.

[10] S. Antad, A. Vidhale, S. Vikhar, S. Thite, and A. Warke, “Smart Contract-Based Decentralized Crowdfunding Platform with AI Integration,” 2024.

[11] M. Hegde et al., “Crowdfunding Using Ethereum Blockchain and MetaMask Integration,” 2024.

[12] M. Narender et al., “A Blockchain-Based Secure Crowdfunding Platform for Fraud Prevention,” 2025.

[13] N. S. Hashemi, A. Z. Sohi, A. S. Arasi, and A. Z. Sohi, “Blockchain-Enabled Fundraising for SMEs: A Systematic Review,” 2024.

[14] A. Arul Prakash, B. Harshavardhan, A. Anil, and D. Saravanan, “Blockchain-Powered Crowdfunding: Ensuring Trust and Security,” 2025.

[15] O. Siddiqui, K. R. Johnson, and S. Gupta, “A Decentralized Framework for Crowdfunding Security,” 2025.

[16] S. Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System,” 2008.

[17] V. Buterin, “Ethereum: A Next-Generation Smart Contract and Decentralized Application Platform,” 2014.

[18] G. Wood, “Ethereum: A Secure Decentralized Generalized Transaction Ledger,” 2014.

[19] Rene Robin, C. R., et al. "A Novel Hybrid Based Method in Covid 19 Health System for Data Extraction with Blockchain Technology." International Journal on Recent and Innovation Trends in Computing and Communication (2023): 81-94.

[20] Josphineleela, R., et al. "Secure internet of things based data communication in blockchain model using novel teaching-learning optimized fuzzy approach." Transactions on Emerging Telecommunications Technologies 34.7 (2023): e4793.