

Blockchain Based Crowd Funding System

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Abstract— In the era of digital innovation, crowdfunding has emerged as a vital mechanism for financing projects, especially those driven by startups and individuals. However, traditional crowdfunding systems often face challenges related to fraud, lack of transparency, and delays in fund allocation. This paper proposes a blockchain-based crowdfunding system that leverages Ethereum smart contracts, decentralized storage (IPFS), and web technologies (ReactJS and NodeJS) to mitigate these issues. By employing smart contracts, the system ensures that funds are released only when predefined conditions are met, thus fostering trust and transparency among contributors. The system's architecture is designed for decentralized interactions, allowing contributors to track campaign progress, vote on expense approvals, and securely access stored documents. Our approach highlights the immense potential of blockchain in transforming crowdfunding by improving security, efficiency, and accountability.

Keywordst— Blockchain, Smart Contracts, Crowdfunding, Ethereum, IPFS, ReactJS, Decentralized Applications, Transparency, Data Security

INTRODUCTION (HEADING 1)

Crowdfunding has transformed the landscape of project financing by allowing individuals and organizations to raise capital directly from the public. Despite its popularity, traditional crowdfunding platforms suffer from issues such as fraud, lack of transparency, and delays in project delivery. Blockchain technology, with its decentralized and immutable architecture, provides a robust foundation to overcome these challenges.

This paper presents a blockchain-based crowdfunding system that leverages Ethereum smart contracts and decentralized technologies to ensure transparency, security, and accountability. Developed using ReactJS, NodeJS, Solidity, and IPFS, the system automates fund disbursement based on community-approved milestones, reducing dependency on intermediaries and enhancing contributor trust.

I. II. LITERATURE REVIEW

Several studies emphasize the potential of blockchain in secure data management. Alzahrani et al. proposed a secure data-sharing framework for healthcare using blockchain. Ramos and Silva examined privacy issues in smart cities, suggesting blockchain-based solutions. Oumaima et al. integrated AI with blockchain to optimize operations in smart environments. Qashlan et al. focused on privacy-preserving mechanisms in smart homes through smart contracts and attribute-based access controls. These studies underline blockchain's applicability across various sectors, justifying its use in crowdfunding

II. III. METHODOLOGY AND SYSTEM DESIGN

The system architecture comprises the following components:

1. Front-End Layer: Built with ReactJS and Recoil for state management. Users interact with campaigns, contribute funds, and vote on expense requests.
2. Back-End Layer: Developed in NodeJS with Web3.js and Ethers.js to facilitate communication with the Ethereum blockchain.
3. Blockchain Layer: Contains Solidity smart contracts deployed on the Rinkeby testnet using Hardhat. Contracts manage contributions, votes, and fund disbursements.
4. Decentralized Storage: Campaign documents are stored on IPFS, ensuring tamper-proof and publicly verifiable storage.
5. External Services: Integration with MetaMask for wallet interactions and Etherscan for transaction verification.

System

- Campaign manager creates a campaign and uploads a proposal (stored on IPFS).
- Contributors fund the campaign.
- Manager creates expense requests.
- Contributors vote to approve/disapprove.
- Upon approval, funds are released to vendors.

Flow:

III. ALGORITHMS USED

- Proof of Work (PoW) and Proof of Stake (PoS): Used to validate transactions on the Ethereum blockchain.
- Smart Contract Logic: Implemented using Solidity, governs campaign creation, contribution, and fund release based on majority voting.
- IPFS CID Generation: Ensures unique file storage identifiers for decentralized documents.

VI. LIMITATIONS AND FUTURE WORK

- Scalability: Ethereum's current architecture may not support high transaction throughput. Future iterations could explore Layer-2 solutions like Optimism or zk-Rollups.
- Smart Contract Vulnerabilities: Requires thorough auditing and testing to avoid exploits.
- Regulatory Uncertainty: Legal status of smart contracts and crypto transactions remains unclear in many jurisdictions.
- UI/UX Improvements: Enhanced onboarding experience for non-technical users.

V. CONCLUSION

Blockchain technology offers a transformative solution for secure, transparent, and accountable crowdfunding. By integrating Ethereum smart contracts and decentralized file storage, this system addresses key issues plaguing traditional crowdfunding platforms.

Although challenges like scalability and legal ambiguity remain, continued research and development can pave the way for mainstream adoption. The project illustrates blockchain's vast potential to revolutionize trust-based digital ecosystems.

IV. REFERENCES

1. A. G. Alzahrani, A. Alhomoud, and G. Wills, "A Framework of the Critical Factors for Healthcare Providers to Share Data Securely Using Blockchain," *IEEE Access*, 2022.
2. L. F. M. Ramos and J. M. C. Silva, "Privacy and Data Protection Concerns Regarding the Use of Blockchains in Smart Cities," *ICTSP*, 2021.
3. F. Oumaima et al., "A Survey on Blockchain and Artificial Intelligence Technologies for Enhancing Security and Privacy in Smart Environments," *IEEE Access*, 2022.
4. A. Qashlan et al., "Privacy-Preserving Mechanism in Smart Home Using Blockchain," *IEEE Access*, 2021.
5. S. Nakamoto, "Bitcoin: A Peer-to-Peer Electronic Cash System," 2008.
6. Goodfellow et al., "Deep Learning," MIT Press, 2016.
7. Ethereum Foundation, <https://ethereum.org>
8. IPFS Project, <https://ipfs.io>
9. ReactJS, <https://reactjs.org>
10. Solidity Docs, <https://soliditylang.org>

