



CROWD FUNDING USING ETHEREUM BLOCKCHAIN

¹MOBINA JAMADAR AUTHOR, ²GAYATREE WASKAR AUTHOR, ³RUTUJA GULME AUTHOR, ⁴PRAJAKTA GOSAVI AUTHOR,

⁵Prof. Deshmukh H.M.

Department of Computer Engineering RGCOE College of Engineering Karjule Harya, India

Abstract—This report proposes the integration of blockchain technology to create a decentralized crowdfunding platform that addresses these challenges. The use of smart contracts ensures automatic and secure transactions, eliminating the need for intermediaries and reducing transaction costs. The platform also leverages blockchain's inherent transparency to provide backers with real-time insights into the progress of the project.

Introduction

Crowdfunding has revolutionized the way individuals and organizations raise capital for diverse projects. By leveraging online platforms, project creators can connect directly with potential backers, facilitating resource pooling for innovative ideas. However, traditional crowdfunding methods often face challenges related to trust, transparency, and accountability, which can deter investors. This report presents a blockchain-based crowdfunding platform designed to address these issues by providing a secure, decentralized environment for transactions. By utilizing smart contracts and enhancing data integrity, our solution aims to create a more reliable and efficient fundraising process, fostering greater confidence among participants in the crowdfunding ecosystem.

The motivation behind the development of a crowdfunding platform using blockchain technology is to address the limitations of traditional crowdfunding models, such as lack of transparency, fraud, and inefficiencies. Blockchain offers a decentralized, secure, and transparent environment, ensuring that funds are immutably recorded, thus building trust among users. By utilizing smart contracts, the platform can automate the donation process, ensuring that funds are only released when predefined conditions are met, reducing the potential for misuse. This solution aims to enhance the efficiency, accountability, and reach of crowdfunding campaigns, enabling creators to access a global pool of supporters while offering donors a secure, transparent way to contribute to causes they care about.

I. EASE OF USE

The aim of this project is to develop a blockchain-based crowdfunding platform that enhances transparency, security, and trust in fundraising. By leveraging blockchain's decentralized nature and smart contracts, the platform ensures secure, transparent transactions and automates the donation process. The goal is to minimize

fraud, provide a reliable system for both campaign creators and donors, and improve the overall efficiency and accountability of crowdfunding campaigns, creating a more trustworthy fundraising environment.

II. PROBLEM STATEMENT

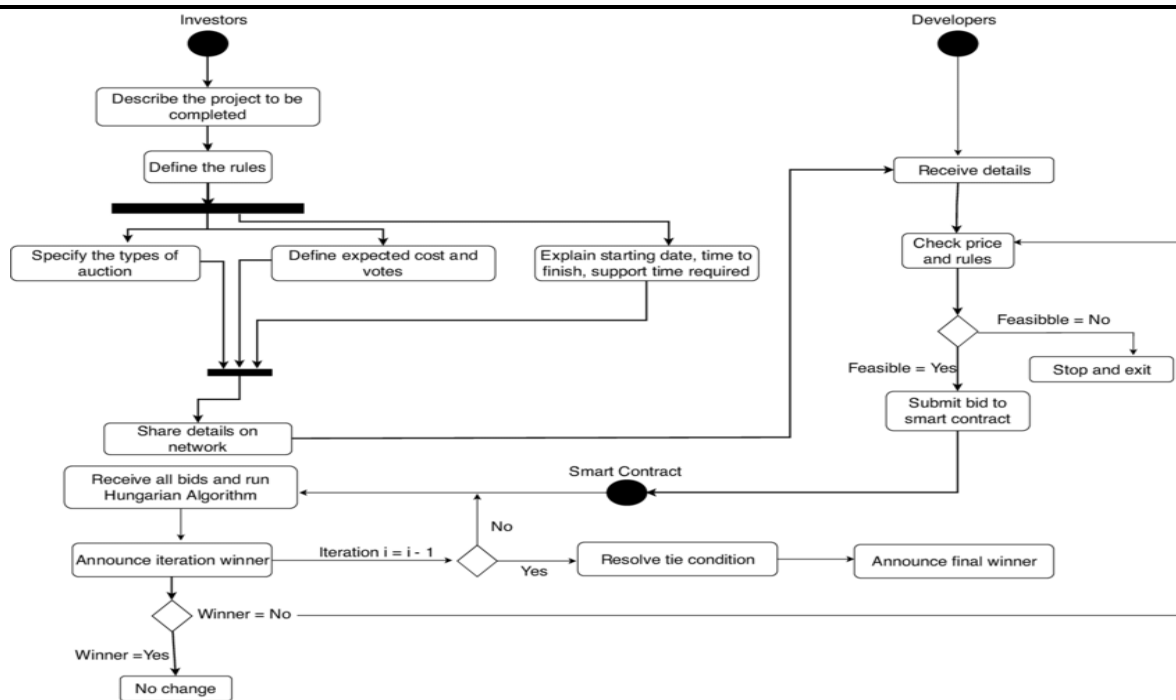
The primary challenge addressed by this project is the lack of trust and transparency in traditional crowdfunding platforms. Many potential backers are hesitant to invest due to concerns about fraud, mismanagement of funds, and the lack of accountability from project creators. These issues create a significant barrier to fundraising for innovative projects, often leading to failed campaigns and missed opportunities. Additionally, the centralized nature of existing platforms raises concerns about data security and control, limiting user confidence and engagement.

To combat these challenges, it is essential to develop a more secure and transparent crowdfunding solution. Current systems often rely on intermediaries, which can increase costs and delay fund distribution. By leveraging blockchain technology, this project aims to create a decentralized crowdfunding platform that enhances security, enables real-time tracking of funds, and fosters greater accountability. This innovative approach can transform the crowdfunding landscape, empowering creators and backers alike while minimizing risks associated with traditional methods.

III. DATA FLOW DIAGRAM

A Data Flow Diagram (DFD) for a blockchain-based crowdfunding platform represents the high-level process of collecting, verifying, and distributing donations. This DFD includes external entities, such as donors and campaign managers, interacting with the platform. Donors contribute funds, which are directed to smart contracts on the blockchain to secure and manage these transactions based on set conditions.

Inside the platform, the main process verifies campaign milestones and securely logs donations, ensuring that funds are released only when milestones are met. All data is stored immutably on the blockchain, providing transparency and enabling donors to monitor campaign progress. This DFD illustrates the secure and transparent flow of funds in a blockchain-based crowdfunding system.



The Data Flow Diagram (DFD) for a blockchain-based crowdfunding platform breaks down the main processes involved in donation management and fund distribution. In this diagram: Donors initiate donation transactions through the user interface, which sends their contributions to the platform. The backend server verifies each donation and records transaction details in a database. The backend then interacts with smart contracts on the blockchain to enforce secure and automated rules for fund distribution. Once a campaign milestone is achieved, smart contracts release funds to the campaign manager. Notifications are sent to donors about campaign updates, ensuring transparency. This DFD clarifies how the platform securely manages donations, verifies milestones, and keeps donors informed at every step.

IMPLEMENTATION AND DISCUSSION

In this decentralised crowdfunding application, through the use of consensus protocol only legitimate and trustworthy donations are allowed for the campaign after proper verification. The algorithm of consensus protocol consists of a mandatory requirement that the transactions which are verified by more than 50% of the nodes contributing in the network would be considered successful and hence validated for donation.

As a result, the transactions which will not be approved by 50% of the contributors would not be considered legitimate and hence rejected. The transaction will pop-up with an error message indicating there is a problem with the donation, due to which the option to finalize the transaction would not be visible to the manager. Thus, the consensus protocol helps in maintaining the integrity and security of the transactions taking place on the decentralised application which in return reduces the chances of monetary frauds and scams. The DAPP shows all the possible errors when triggered like insufficient funds in wallet, invalid input, unauthorized access (i.e. not a manager or contributor), etc. On every transaction, it will take about 15-30 seconds to confirm the

transaction on blockchain. Each transaction on blockchain requires some amount of ether as gas fee, which is paid by the person doing the transaction.

CONCLUSION

The crowdfunding platform developed using blockchain technology significantly enhances the fundraising process by ensuring security, transparency, and accessibility. We were also successful in achieving this with the help of Ethereum network. The security issues in crowdfunding platforms can be answered by the introduction of the blockchain technology which functions on a trust-free system. With the help of Ethereum network the money doesn't go directly in the hands of the campaign initiator, whereas it is been stored on an Ethereum account. Before utilizing any assets from the account, the campaign initiator needs to create a request, mentioning where and how much money he wants to spend. He can only proceed further when his request gets a significant number of approvals from the contributors, thus making the system more reliable and transparent. When a request gets a sufficient number of approvals that is more than half of the total contributor, the campaign initiator then can finalize the request, and carry forward the transaction. Blockchain technology provides easy, secure and a convenient means for the exchange of information and transfer of funds.

REFERENCES

- [1] S. Pandey, S. Goel, S. Bansla and D. Pandey, "Crowdfunding Fraud Prevention using Blockchain," 2019 6th International Conference on Computing for Sustainable Global Development (INDIACom), 2019, pp. 1028-1034. Available: <https://ieeexplore.ieee.org/document/8991341>.
- [2] V. Patil, V. Gupta and R. Sarode, "Blockchain-Based Crowdfunding Application," 2021 Fifth International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) (I-SMAC), 2021, pp. 1546-1553. IEEE. Available: <https://ieeexplore.ieee.org/document/9640888>.
- [3] H. Tian et al., "Enabling Cross-Chain Transactions: A Decentralized Cryptocurrency Exchange Protocol," in IEEE Transactions on Information Forensics and Security, vol. 16, pp. 3928-3941. IEEE. Available: <https://ieeexplore.ieee.org/document/9478888>.
- [4] Zhao, Hongjiang and Coffie, Cephas P.K, Swapping the underlying technology of crowdfunding contracts for blockchain – the perspective of Roger's five perceived attributes of innovation (January 11, 2018). Research Article, Available at SSRN: <https://ssrn.com/abstract=3133176>.
- [5] S. -K. Tien, Y. -T. Wang, Y. -Z. Cai and M. -H. Tsai, "Maximizing the Time Value of Cryptocurrency in Smart Contracts with Decentralized Money Markets," 2020 IEEE International Conference on Blockchain (Blockchain), 2020, pp. 503-508. IEEE. Available: <https://ieeexplore.ieee.org/document/9284748>.
- [6] Ashari, Firmansyah. (2020). Smart Contract and Blockchain for Crowdfunding Platform. International Journal of Advanced Trends in Computer Science and Engineering. 9. 3036-3041. 10.30534/ijatcse/2020/83932020.

[7] IRJET-V8I41024.pdf [8] Yi-Hui Chen, Shih-Hsin Chen, Iuon-Chang Lin, “Blockchain based smart contract for bidding system”, 2018 IEEE International Conference on Applied System Invention (ICASI), Apr 2018, 978-1-5386-4342-6.

[8] B. Hu and H. Li, “Research on Charity System Based on Blockchain”, SAMSE, IOP Conference Series: Material Science and Engineering, 2020.

[9] M. Zichichi, M. Contu, S. Ferretti and G. D’Angelo, “LikeStarter: A Smart-contract based Social DAO for Crowdfunding”, arXiv:1905.05560v3 [cs.CY], 6th Nov 2019.

[10] V Buterin, “Ethereum: A next-generation smart contract and decentralized application platform”, White Paper, Vol:3, Issue: 37, 2014.

[11] S. Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System”, www.bitcoin.org, 2009.

[12] A. M. Antonopoulos, “Mastering Bitcoin”, ISBN: 9781449374044, O'Reilly Media Inc., Dec 2014.

[13] J. Frankenfield, “Decentralized Applications (dApps): Definition, Uses, Pros & Cons”, www.inestopedia.com, Mar 2022.

[14] Weckerow, “Ethereum Documentation: Introduction to DAPPS”, www.ethereum.org, Sep 2022.

[15] S. S. Nagaraj, “Crowdsourcing Funding Solution Based On Blockchain Tokens”, California State University, Computer Science, Sacramento, 2018.

