

Crowd Gain – Crowdfunding Web Application Based on Blockchain using Ethereum

Shrishti Varshney, Satyam Aggarwal, Vinay Sharma, Rahul Sharma

Department of Computer Science and Engineering
Raj Kumar Goel Institute of Technology, Ghaziabad

Abstract: Crowdfunding is a novel technique to directly generate cash and obtain investors for new commercial ventures from the public, rather than generating funds in traditional ways, such as leasing money from banks or pitching project ideas in front of investors. Crowdfunding websites connect investors and artists on a platform that makes investors easily accessible. Blockchain-based crowdfunding offers an alternative to the traditional method of raising capital for businesses. Typically, when creators need money for their initiatives, they must develop marketing plans to draw in individuals or organizations. The three-tier structure of current crowdfunding approaches includes a project creator who proposes the idea of the project to be funded, an organization or investor who invests in the project, and a platform that combines these two elements to create a successful company.

Keywords: Blockchain, MetaMask, decentralized, Smart Contracts, Ethereum, Third Web, Goerli Faucet, Solidity.

I. INTRODUCTION

Crowdfunding is a decentralized insecure method of gathering money for a project or an idea. Blockchain technology, especially the Ethereum network and tools like MetaMask wallet, Goerli faucet, third web, EtherScan are used in this process. Blockchain based crowdfunding is a peer-to-peer mechanism that does not relay on conventional middlemen, allowing anybody who takes part and donate money to the project directly.

Smart Contracts can be made possible via the Ethereum network or decentralized, open source blockchain technology. These smart contracts are ideal for using crowdfunding because they make it possible for agreed-upon terms and conditions to be automatically implemented [1].

A MetaMask wallet is a browser plugin that connects a user's web browser with the Ethereum network. It enables user interaction with decentralized apps (dApps) on the Ethereum network, such as crowdfunding applications.

A smart contract that specifies a financial goal, the deadline for accomplishing that goal and the conditions under which the funds will be allocated to the campaign creator is setup on the Ethereum network by the campaign creator in a blockchain based crowdfunding platform. Since the smart contracts is a self-executing, the funds are automatically disbursed if the raising fund is matched, and deadline is met. The process of contributing to a blockchain based crowdfunding campaign is straightforward.

Simply link your MetaMask wallet to the website, open the desired campaign that you want to fund, enter your desired donation amount, and transfer your Ethereum coins to the project's unique smart contract address. A transparent and secure record of the transaction is subsequently created by the gas fee being recorded on EtherScan.

[2] Blockchain based crowdfunding technique offers enhancement of security, reducing risks of investment failure, any kind of fraud as compared to the traditional crowdfunding techniques. Additionally, because donations may be made from anywhere in the globe, it offers a more open and inclusive platform for people to support initiatives and concepts.

In conclusion, utilizing blockchain technology for crowdfunding, particularly the Ethereum network with a tool like the MetaMask wallet, provides a decentralized, safe, and convenient method to raise money for ideas and initiatives. It offers a variety of benefits over conventional crowdfunding techniques, as well as a clear and effective approach for donors and project developers.

II. LITERATURE REVIEW

A literature review of several studies related to crowdfunding platform using blockchain, Ethereum wallet, and MetaMask would reveal the following key findings:

Decentralization:

Menon et. al. [3] have emphasized the advantages of adopting a decentralized platform for crowdfunding, such as improved security, transparency, and minimized fraud compared to conventional centralized platforms.

Blockchain Adoption:

Zad et al. [4] investigated the use of blockchain technology for crowdfunding and discovered that it has the potential to become a major participant in the crowdfunding sector.

Smart Contracts:

Ankita et al. [5] studied the use of smart contracts on the Ethereum network for crowdfunding and discovered that they provide a secure and efficient mechanism to handle funds raised, automate fund release, and enforce conditions agreed upon by the parties involved.

User Experience:

Hassija et al. [6] investigated the user experience of utilizing a blockchain based crowdfunding platform and discovered that tools such as the MetaMask wallet make it easier for users to engage in the crowdfunding process by facilitating the sending and receiving of funds.

Investment Risks:

Abhrajit et. al. [7] have emphasized the investment risk associated with blockchain based crowdfunding, such as the high volatility of cryptocurrency and the uncertainty of the regulatory environment.

Regulation: Abhrajit et. al. [7] have analyzed the regulatory challenges confronting blockchain based crowdfunding platforms and advocated for the adoption of clear and effective regulations to promote the sector's growth and stability.

In summary, the above-mentioned literature review suggests that blockchain-based crowdfunding platforms have the potential to offer many benefits, they also face several challenges that need to be addressed. Nevertheless, the use of blockchain technology in crowdfunding is likely to continue to grow in the coming years as more individuals and organizations recognize its potential to provide a secure, transparent, and efficient platform for raising funds.

III. TECHNOLOGIES USED

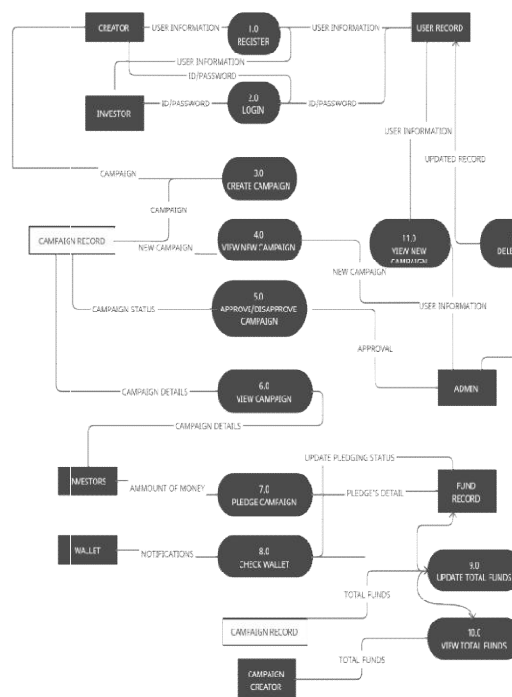
[8] Stated that building a crowdfunding web application using blockchain and Ethereum can involve several technologies. Here are some of the key technologies and components that you may need to consider:

1. **Ethereum Blockchain:** Ethereum is a popular blockchain platform that enables developers to build decentralized applications (dApps). You can use the Ethereum blockchain to store and manage crowdfunding transactions, as well as create and execute smart contracts.
2. **Solidity:** Solidity is a programming language used to write smart contracts on the Ethereum blockchain. You can use Solidity to create smart contracts that implement the rules and logic of your crowdfunding platform.
3. **Web3.js:** Web3.js is a JavaScript library that provides an interface for interacting with the Ethereum blockchain. You can use Web3.js to connect your crowdfunding web application to the Ethereum network, send and receive transactions, and execute smart contracts.

4. **MetaMask:** MetaMask is a browser extension that allows users to interact with decentralized applications on the Ethereum blockchain. You can integrate MetaMask into your crowdfunding web application to enable users to connect their Ethereum wallets and make contributions to campaigns.
5. **Third Web:** Third Web is a concept that refers to the next evolution of the internet, where data is decentralized, secure, and free from the control of large corporations or governments. This concept is closely tied to blockchain technology, which enables decentralized networks that are secure, transparent, and tamper-proof. When it comes to crowdfunding, blockchain technology can offer several advantages, such as increased transparency, lower costs, and more efficient processes. By using blockchain-based crowdfunding platforms, entrepreneurs and small businesses can access funding from a global network of investors, without having to go through traditional financial institutions.
6. **Goerli Faucet:** A Goerli faucet can be used to obtain test Ether (ETH) which is the native cryptocurrency of the Ethereum network. Test ETH can be used to test crowdfunding smart contracts and DApps on the Goerli network without having to use real money. A Goerli faucet is a tool that distributes test ETH to developers for free, which can then be used to test crowdfunding contracts and DApps. This can be helpful in identifying any potential issues or bugs in the smart contracts or DApps before they are deployed to the main Ethereum network, which can help reduce the risk of financial loss.

IV. PROPOSED WORK

[9] blockchain based crowdfunding algorithm provides a framework of a platform using Ethereum.



The above-mentioned diagram states the main components in blockchain based crowdfunding platforms:

Creation of a Campaign: To publish a new campaign on crowd gain, Creators need to first connect themselves through the MetaMask and then provide an overall description of the campaign, Goal amount to be gained through the campaign and the required time period till the amount needs to be collected. For every transaction a small amount of

gas fees is being charged through MetaMask. After clicking on 'Submit new campaign', A new campaign is being created within a few seconds and a new campaign is published to the portal.

Smart Contract Deployment: A smart contract is deployed on the Ethereum blockchain, which sets the rules for the crowdfunding process. The smart contract includes the project details, the funding goal, and the conditions for releasing funds to the project creator.

Transaction: While the campaign is being created by the creator, they must pay a small amount of gas fees to enlist the campaign using the MetaMask, On the investor side, investors also need to use MetaMask to donate to the campaign. This transaction process will take 15-20 seconds, once the transaction is approved, the campaign will receive their donated amount.

Fund Campaign: After MetaMask confirmation, investors can easily fund the appropriate campaign. On the campaign dashboard, the address of donors specified correctly who contributes to the campaign. After Ethereum is received, campaign details are displayed on the show campaign section.

Fund Goal Achieved: If the funds goal is achieved before the campaign deadline, the smart contract automatically provides all the funds to the campaign creator, so that they can create another campaign further.

Fund Goal Not Achieved: If the fund goals are not achieved before the deadline, the smart contract automatically returns the funds to the donors.

V. CONCLUSION AND FUTURE WORK

[10] Crowdfunding on the blockchain, utilizing the Ethereum network and a technology like the MetaMask wallet, is a decentralized and safe method to support initiatives and ideas. When compared to typical crowdfunding approaches, this strategy allows anybody to engage and donate funds directly to the project, resulting in better security, reduced fraud, and lower expenses. However, there are obstacles to overcome, such as financial risks, legal barriers, and the requirement for successful smart contracts.

Future research in the area of crowdfunding platform could focus on the following areas:

Regulatory Environment: [7] Effective regulations of cryptocurrencies, crowdfunding platforms, provides growth and stability to these platforms also protecting the rights of investors, In India SEBI regulates the digital currencies and due to investment risks in previously made crowdfunding platforms, SEBI consider these as illegal.

Investment Risks: [11] Further research could be done to better understand the investment risks associated with crowdfunding on the blockchain, such as the volatility of cryptocurrency and the potential for fraud, and to develop strategies for mitigating these risks.

Overall, future research in blockchain-based crowdfunding has the potential to contribute to the growth and stability of the sector, and to help address some of the challenges and risks associated with this form of fundraising.

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