Securing Crowdfunding Platforms: Implementing Blockchain for Fraud Detection

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Abstract:

Crowdfunding is an online fundraising procedure that was originally designed to allow members of the public to contribute small sums of money to support creative people's projects. Crowdfunding uses blockchain technology to provide consumers with smart contracts. This allows us to deliver crowdfunding in a safe, open, and transparent manner. This project aims to create interactive forms for campaign development and financial contributions. This system allows campaign creators and contributors to view or submit requests for approval, as well as construct and support their initiatives. Furthermore, the donor may be able to monitor the utilization of the funds they donate. Every transaction will be recorded as blocks on the blockchain and monitored accordingly. The use of smart contracts in the blockchain is tempting. A blockchain-based agreement must be created, carried out, and enforced by untrustworthy members without the intervention of a trustworthy third party. Developing blockchain-compatible executable code is critical. Blockchain was initially used primarily as the foundation for cryptocurrencies, but it has since spread to a variety of other enterprises. Blockchain technology is expected to become the most widely used green method of conducting internet transactions. Blockchain technology is employed in a variety of applications, including crowdfunding sites. The biggest difficulty confronting the global crowdfunding industry today is a lack of strong control over campaigns, as some attempts at crowd investing have proven fraudulent. This work aims to address these issues by ensuring that initiatives may be added within the given time frame, eliminating fraud, and allowing contracts to be fully mechanically executed using Ethereum smart contracts on the crowdfunding site.

Keywords: Blockchain, Smart contract, Ethereum, Crowdfunding, Cryptocurrency

I. Introduction

Crowdfunding is the process of generating funds for a project or campaign without the support of respected organizations such as banks or loan providers. Crowdfunding, as defined by Freedman and Nutting, is the process of raising a large number of small donations for a well-known firm through an internet finance platform. Crowdsourcing has three key stakeholders: platforms, project managers, and contributors. The key advantage of crowdsourcing is its ability to swiftly gather the requisite amount of funds. This is due to the widespread usage of social media and the Internet, which allows the initiative's creator to engage with the public in real time. Crowdfunding can be used to raise funds in a variety of ways.

Lending money to firms may induce investors to hope that they would eventually receive their principal and interest back. Investing can also be done with the goal of making a profit. Investors can exchange their money for shareholder status, which grants them dividend payments and voting rights. Some investors may opt to make monetary contributions rather than anticipating a return on their investment. The use of blockchain technology not only boosts the validity of fundraising organizations, but it can also be used as proof by funders to verify that money is coming from trustworthy sources and to vet receivers of funding to ensure their dependability. Despite their obvious benefits, crowdfunding platforms continue to have several difficulties that must be addressed. One of the most significant issues with traditional crowdfunding platforms is the incidence of fraud lawsuits, which claim that online crowdfunding exposes contributors to fraud since traditional legal.

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Procedures to defend one's reputation would likewise fail. Industry 4.0 affects practically every industrial sector, including nonprofit and for-profit businesses. Although for-profit and non-profit organizations share characteristics, they also face distinct challenges. For example, practically every country confronts similar challenges in addressing to the current Covid-19 outbreak, particularly in terms of available financial resources. To contain the Covid19 pandemic, the government used a variety of public-finance management techniques. The community responded to this situation by donating money to assist the government in combating the Covid-19 outbreak. However, raising funds is a complex procedure since it involves confidence from a large number of people, including funders, mediators, and organizations that serve as a repository for the recipient's short-term cash. Trust is essential for fundraising organizations to persuade contributors to commit their funds to gift recipients. Similar to the Covid-19 epidemic, many NGOs organize fundraising events. Because they lack trust, their biggest issue is persuading people to donate money to the organization. Many of them are NGOs that use technology to simplify the donation process for people. Thus, it is fair to conclude that, in addition to trust, which is the most crucial component in producing as much money as possible, technology also plays a significant role. An earlier study suggested that the approach may be applied in the medical and telecommunications industries. In addition to increasing trust in philanthropic organizations, blockchain technology may be used for receiver confirmation, regardless of reliability, and donor confirmation, ensuring money come from trustworthy sources.

II. LITERATURE SURVEY

[1] Funders can support creators' projects by providing money through online channels known as crowdfunding platforms. The platform hopes to see more successful efforts, both in terms of quantity and size. Creating a wide community of investors and producers, reducing fraud, and simplifying the process of successfully combining ideas and resources are all critical to achieving this goal. The platform's key features include tools for efficient user-to-user communication, campaign presentation, and other services. They do not, however, perform critical duties such as evaluating campaigns at various stages of financing, connecting interested campaigns with potential supporters, and verifying creator trustworthiness and credibility. The approach used in this study was evaluated with Kickstarter sample data. Part of the dataset was obtained from the Kick spy website. The platform and other resources were employed to gather the remaining information.

[2] Almost every business sector, from lucrative to non-profitable, relies on generation in this era of business technology 4.0 to support their operations. In the absence of profits non-earnings companies may exhibit features similar to those of earnings-oriented enterprises. But those businesses encounter unique obstacles. Nowadays, with the Covid-19 pandemic, practically all users have identical challenges in dealing with this issue, notably in terms of the required expense. Authorities have used a variety of budget management techniques to address the Covid-19 epidemic. This issue also encouraged the network to enhance financing to assist the government in tackling the COVID-19 outbreak. Raising the budget is a complex procedure that entails considering the perspectives of other stakeholders, such as donors, middlemen, and enterprises, in order to maintain the recipient's temporary money. This is the primary funding source that fundraising organizations utilize to attract contributors to give their budget-to-budget recipients. Many non-profit organizations raise funds, particularly during the Covid-19 pandemic. Developing donor confidence is critical for gaining financial contributions to the organization.

III. SYSTEM ANALYSIS

A. EXISTING SYSTEM

Blockchain Platform: Choose a suitable blockchain platform. Ethereum is a popular platform for generating smart contracts and decentralized applications (DApps).
Create an Ethereum blockchain network, whether private or public, based on the requirements of your project.
Smart contracts: Create smart contracts for crowdfunding efforts using Ethereum's programming language, Solidity.
The development, contribution, approval, and distribution of campaign funding should all be subject to smart contract regulations.
The user interface (UI):
Provide a user-friendly web interface for both funders and campaign developers.

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Provide interactive forms for fundraising, campaign development and management, and campaign progress tracking.
Use web3.js to connect to the Ethereum blockchain via the web interface.

DISADVANTAGES OF THE EXISTING SYSTEM

Blockchain Scalability: Ethereum and other contemporary blockchain systems face scalability concerns. The network may get overloaded, and transaction processing times may increase as the number of users and transactions grows.

Transaction costs: In Ethereum, these are known as gas costs. Blockchain transactions incur expenses. Users who give small sums to crowdfunding campaigns may be concerned about these costs, which vary depending on network demand.

User Education and Adoption: Campaign authors and donors may face a learning curve due to their lack of knowledge with blockchain technology and smart contracts. For widespread adoption, user education and onboarding are critical.

Volatility of Cryptocurrency: The currencies used in blockchain transactions are usually unpredictable. Price adjustments may have an impact on the value of contributions and funds raised for campaign producers and contributors.

Regulatory Uncertainty: The regulations governing blockchain technology and crowdfunding are still being developed. It can be difficult to comply with local laws, particularly those governing KYC (Know Your Customer) rules, which may preclude some users from engaging.

Security Risks of Smart Contracts: Because smart contracts contain code, they may be prone to flaws if not developed and audited correctly. Flaws or vulnerabilities can lead to financial losses or unauthorized access.

Limited Smart Contract Flexibility:
When smart contracts are deployed on a blockchain, they cannot be modified. If any flaws or revisions are required, a new contract may be required, resulting in a complicated procedure that could disrupt ongoing work.

B. PROPOSED SYSTEM

The proposed method, "Blockchain-Based Crowdfunding," which specifically uses Ethereum smart contracts, intends to transform online fundraising. The strategy aims to address critical issues such as fraud, inefficiencies, and a lack of regulation in the worldwide crowdfunding economy. Donors may donate with confidence, and campaign developers can simply construct initiatives that include interactive forms owing to an easy-to-use and secure web platform. By using Ethereum smart contracts, crowdfunding agreements are carried out automatically, eliminating the need for middlemen and minimizing the risk of fraud. The time-limited campaigns provide a sense of urgency, and all transactions are stored on the blockchain, ensuring transparency and unchangeable data. The system touts itself as a dependable and environmentally sustainable method of conducting online transactions, while simultaneously embracing the decentralized nature of blockchain technology and capitalizing on its expansion beyond cryptocurrencies. The proposed system aims to provide a reliable crowdfunding environment by making innovative use of blockchain technology, reducing fraud, closely monitoring campaigns, and enabling speedy, automated, and safe transactions between users through smart contracts.

IV.SYSTEM DESIGN

SYSTEM ARCHITECTURE

Below diagram depicts the whole system architecture.

Fig 6.1 Ethereum architecture

Fig 1. Methodology followed for proposed model

V. SYSTEM IMPLEMENTATION

MODULES

Module for Campaign Management: This module contains tools for designing, editing, and tracking campaigns. It includes interactive campaign development forms that allow creators to specify the length of their crowdfunding campaign, set goals, and describe their efforts. Campaign progress tracking measures have also been introduced to keep contributors and campaign designers updated.

User Authentication and Authorization Module: This module handles user authentication and authorization to ensure secure user access. Its capabilities include account management, login, and user registration. Authentication techniques enhance the platform's security, and users are granted the necessary authorization to conduct operations such as fund contributions and campaign creation.

Blockchain Integration Module: This core module facilitates communication with the blockchain and the integration of Ethereum smart contracts. It manages smart contract implementation, transaction execution, and blockchain data retrieval. This module is critical to the crowdfunding site's security and transparency since it ensures that every transaction is documented on the blockchain.

Transaction Handling Module: This module ensures that crowdfunding agreements are carried out smoothly by monitoring the flow of transactions between users and smart contracts. It includes capabilities for managing contributions, approving requests, and allocating funds. The adoption of suitable error handling and feedback methods allows users to receive clear information about the status of their transactions.

User Interface (UI) and Experience Module:
The major goal of this module is to develop an intuitive user experience for campaign creators and donors. It includes interactive components for initiating campaigns, donating money, and tracking results. To enable connection with the blockchain, the user interface module could use web3.js or other equivalent frameworks. User adoption and happiness are considerably boosted by a well-thought-out and user-friendly user interface.

VI . RESULTS AND DISCUSSION

The intended "Blockchain-Based Crowdfunding" system, which provides a safe, open, and effective platform for funders and campaign designers, represents a significant advancement in the field of online fundraising. The solution effectively addresses major issues such as fraud, control concerns, and inefficiencies that are inherent in traditional crowdfunding models by utilizing blockchain technology and Ethereum smart contracts. The inclusion of interactive campaign management functions allows creators to effectively explain their projects, and donors may contribute money with confidence knowing that their transactions are conducted independently and transparently on the blockchain. The intended "Blockchain-Based Crowdfunding" system, which provides a safe, open, and effective platform for funders and campaign designers, represents a significant advancement in the field

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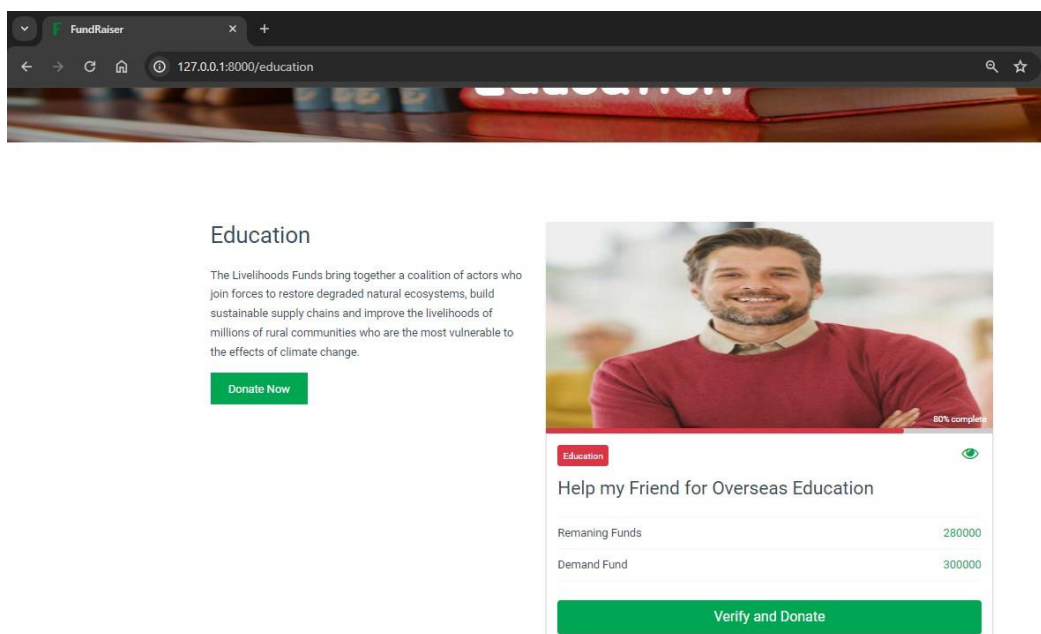
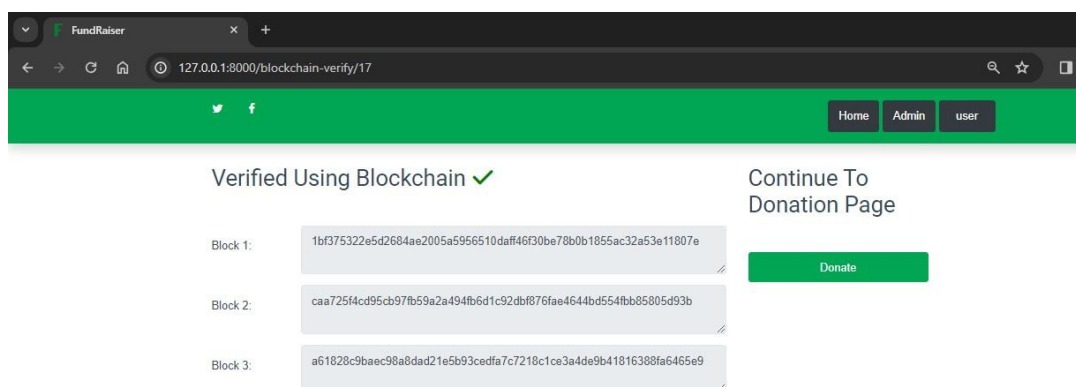

Fig 2. Checking Funding Data

Fig 2. Verifying Funding Details Before Donating

VI I.CONCLUSION AD FUTURE WORK

The three major crowdfunding sites are ideal candidates for smart contracts based on blockchain technology. Smart contracts use blockchain technology to speed up critical fundraising procedures while also enhancing trust. Businesses will pay huge costs if they devote resources to creating blockchain-based intelligent contracts. Businesses that offer intelligent contract services frequently use cryptocurrencies, albeit not all governments formally allow of their use. As a result, the public is unaware of the blockchain's role in crowdfunding. We created an app that is simple to use for normal males. And that's not all. Because of improvements in blockchain technology and the rise of initial coin offers (ICOs), our application has a bright future with many potentials for growth. Because blockchain technology and cryptocurrencies are still being adopted globally, it will take some time for the community to recognize and approve Ethereum-based decentralized applications (Dapps). People will adopt blockchain-powered crowdfunding services once they comprehend the basics.

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