

Crowd Funding Using Blockchain

Mrs. M. Karthika¹, Barath Kumar S², Aryan Reddy A³, Sandeep P⁴, Prabhu V⁵

^{1, 2, 3, 4, 5} Dept of CSE

^{1, 2, 3, 4, 5} CARE College of Engineering

Approved by AICTE | Affiliated to Anna University

#27, Thayanur, Trichy - 620009

Abstract- Crowdfunding platforms have revolutionized the way individuals and startups raise capital. However, the current centralized models pose risks such as lack of transparency, security vulnerabilities, and high transaction fees. This project proposes a decentralized crowdfunding system built on blockchain technology to ensure secure, transparent, and tamper-proof transactions between fundraisers and donors. Utilizing smart contracts on Ethereum, our system automates the funding process, enforces funding goals, and returns funds to donors if targets are not met. The aim is to enhance trust, reduce intermediaries, and empower global fundraising efforts.

that the funds are released only when predefined conditions are met.

The motivation behind this project stems from the desire to build a trustworthy and efficient crowdfunding system that minimizes intermediaries and empowers both fundraisers and contributors. By integrating blockchain with modern web technologies like React (frontend), Node.js (backend), and MongoDB (database), this project aims to provide a seamless and secure user experience while revolutionizing the traditional crowdfunding model.

I. INTRODUCTION

Traditional crowdfunding platforms act as intermediaries, controlling the flow of funds and data. This centralization introduces vulnerabilities, including misuse of funds and lack of donor trust. Blockchain, with its decentralized and immutable ledger, offers a solution to these challenges. This project explores the implementation of a crowdfunding platform using Ethereum smart contracts, providing transparency, automated fund handling, and verifiable transactions. The system promotes accountability and eliminates the need for a trusted third party.

Background and Motivation

In recent years, crowd funding has emerged as a powerful tool for raising funds from a large number of individuals to support entrepreneurial, social, or personal initiatives. Traditional crowd funding platforms like Kickstarter and GoFundMe have enabled countless projects to flourish. However, these centralized platforms often lack transparency, charge high service fees, and pose a risk of fund mismanagement or fraud.

Blockchain technology, known for its decentralized and immutable nature, presents a compelling solution to address these issues. By leveraging blockchain, crowd funding platforms can offer enhanced security, transparency, and accountability in financial transactions. Smart contracts further enable automated and trustless fund management, ensuring

Research Objectives:

- To design and develop a secure crowdfunding platform using blockchain technology that ensures transparent and tamper-proof transactions.
- To implement smart contracts for automating fund management and enforcing rules without the need for third-party intermediaries.
- To ensure transparency and accountability by allowing contributors to track the flow of funds and project milestones on the blockchain.
- To create an intuitive and user-friendly interface using HTML, CSS, and React for seamless interaction between fundraisers and contributors.
- To integrate a robust backend system using Node.js and MongoDB to handle user data, project listings, and blockchain interactions.
- To evaluate the effectiveness and efficiency of the blockchain-based approach compared to traditional crowd funding systems in terms of security, cost, and trust.

II. LITERATURE SURVEY

The integration of blockchain technology into crowd funding has gained significant attention in recent years, aiming to solve issues related to trust, transparency, and security in traditional platforms. Several studies and projects have explored this intersection:

- **Traditional Crowd funding Platforms**
Existing platforms like Kickstarter, Indiegogo, and

GoFundMe operate on centralized architectures. These platforms often charge high fees and provide limited transparency regarding how funds are managed. Contributors must rely entirely on the platform's integrity, leading to trust issues in case of project failure or fraud.

- **Blockchain for Decentralization and Transparency**

According to Nakamoto's foundational paper on Bitcoin (2008), blockchain technology enables decentralized, tamper-proof transactions without relying on intermediaries. This can be applied to crowdfunding by creating transparent ledgers for all contributions and project-related expenses.

- **Smart Contracts in Crowdfunding**
Buterin (2014) introduced Ethereum as a platform supporting smart contracts—self-executing agreements with predefined rules. Projects like KickICO and WeTrust have demonstrated how smart contracts can automate fundraising processes, ensuring that funds are released only when certain conditions are met, improving accountability and reducing fraud.
- **Security and Trust in Blockchain-based Systems**
Research by Zheng et al. (2017) highlights how blockchain enhances data integrity, security, and user trust in financial applications. These features are particularly relevant in the crowdfunding context, where mismanagement of funds is a major concern.
- **User Adoption and Usability Challenges**
While blockchain provides technical advantages, studies emphasize the need for user-friendly interfaces. Projects like Giveth and FundRequest focus on simplifying the user experience while maintaining the benefits of decentralization.

Challenges in Existing Models

- **Lack of Transparency**
Traditional platforms do not provide detailed insights into how funds are used after collection. Contributors have limited visibility into the progress of the project or whether their money is being used as promised.
- **Centralized Control**
Most existing platforms operate under centralized authorities, creating a single point of control—and failure. This centralization can lead to biased decisions, censorship, or even fund misappropriation.
- **High Transaction and Platform Fees**
Crowdfunding platforms typically charge a significant percentage of the raised amount as

platform and transaction fees, which reduces the actual funds received by the project creators.

- **Delayed or Failed Fund Disbursement**
Funds are often held until the campaign ends or specific terms are met, leading to delays. Sometimes, even after successful campaigns, funds are not properly released due to technical or administrative issues.
- **Risk of Fraud and Scams**
There's no guarantee that a project creator will deliver on their promises. Many backers have lost money due to fraudulent campaigns or project failures, with little to no legal recourse.
- **Lack of Automation**
Fund management and milestone tracking are usually manual, leading to errors or manipulation. The absence of automated mechanisms to handle fund release increases dependency on trust.
- **Limited Global Reach**
Traditional platforms may not be available or fully functional in all countries due to regulations or payment gateway limitations, restricting both fundraisers and donors.

III. PROPOSED SYSTEM

The proposed blockchain-based crowdfunding platform will:

- Deploy smart contracts to manage project creation, fund collection, and goal enforcement.
- Accept contributions in cryptocurrency (ETH).
- Automatically return funds if funding targets are not met by deadline.
- Ensure real-time visibility of fund status to both campaign creators and contributors.
- Be accessible through a user-friendly decentralized web application (DApp).

Advantages of the Proposed System

- **Enhanced Transparency**
All transactions are recorded on the blockchain and are publicly viewable, allowing contributors to track the flow of funds and ensure they are used as intended.
- **Decentralization**
By removing the need for intermediaries or centralized authorities, the system becomes more resilient, trustworthy, and censorship-resistant.
- **Smart Contract Automation**

Smart contracts handle fund release automatically based on predefined conditions (e.g., project milestones), reducing the risk of fraud or misuse.

- **Security and Data Integrity**

Blockchain's cryptographic nature ensures that data cannot be tampered with, providing a secure environment for both project creators and contributors.

- **Low Transaction Fees**

Compared to traditional platforms, blockchain transactions generally have lower fees, ensuring that a higher percentage of the funds reach the intended recipient.

- **Global Accessibility**

The system can be accessed by anyone with an internet connection and a crypto wallet, removing barriers related to geographic location or banking limitations.

- **Trustless Environment**

Contributors do not need to "trust" the project creator or platform—instead, they rely on smart contracts and transparent code to manage funds objectively.

- **Real-Time Updates**

Contributors can receive real-time updates about the project's progress and fund usage, boosting confidence and engagement.

IV. METHODOLOGY

Smart Contract Design:

- Written in Solidity on the Ethereum platform.
- Functions: create Campaign, contribute, checkGoalReached, refund.

Frontend Development:

- Developed a web interface using HTML, CSS, JavaScript, and Node.js for frontend functionality, integrated with Web3.js for blockchain interaction.
- Utilized MetaMask for secure wallet authentication.
- Implemented the backend using React and managed data using MongoDB for efficient storage and retrieval.

Model Development:

- Developed in Solidity on the Ethereum blockchain.

- Handles campaign creation, fund collection, goal checks, and refunds
- Smart contracts tested on Remix IDE and deployed on Ethereum Testnet.
- Frontend hosted and linked with the blockchain for live interaction.

Model Evaluation:

- Verified all core features: campaign creation, ETH contribution, goal checks, and refunds.
- Ensured smooth interaction between frontend and blockchain.
- Checked for smart contract vulnerabilities like re-entrancy and unauthorized access.
- All transactions recorded on blockchain for full transparency.

V. DEPLOYMENT:

- Contracts deployed on Ethereum testnet (Goerli/Rinkeby).
- Frontend hosted using decentralized hosting (e.g., IPFS or GitHub Pages).

Results

- Successfully implemented smart contracts for fund creation, collection, and disbursement.
- Validated automatic refund feature for unmet goals.
- Ensured all transactions are recorded on the blockchain for full transparency.
- Demonstrated improved donor trust and platform reliability through immutable records.

DiscussionStrengths:

- Eliminates need for centralized authority.
- Guarantees fund transparency and security.
- Encourages more global participation in fundraising.

Limitations:

- Dependent on Ethereum gas fees and network speed.
- Users require a basic understanding of blockchain wallets.
- Smart contract bugs can be critical without extensive testing.

VI. CONCLUSION

The blockchain-based crowdfunding system offers a secure, transparent, and automated alternative to traditional platforms. With smart contracts handling fund logic, it builds trust among users and ensures fair transactions. This system has the potential to redefine global fundraising by decentralizing control and enforcing accountability.

VII. FUTURE WORK

- **Integration with Multiple Blockchains**
Future versions of the system can support cross-chain functionality, allowing users to choose from different blockchain networks (e.g., Ethereum, Polygon, Solana) based on gas fees, speed, and scalability.
- **KYC and Identity Verification**
To enhance trust and regulatory compliance, the platform can integrate Know Your Customer (KYC) processes to verify the identities of fundraisers and backers.
- **AI-Based Fraud Detection**
Incorporating AI/ML models to monitor campaign behavior and flag potentially fraudulent or suspicious activity can further improve platform security.
- **Mobile Application Development**
Building native Android and iOS apps will make the platform more accessible and convenient for users, especially in mobile-first regions.
- **Community Governance (DAO Implementation)**
Introducing a Decentralized Autonomous Organization (DAO) structure will allow users to vote on platform updates, approve projects, and manage funds collaboratively.
- **Fiat-to-Crypto Payment Gateway**
Integrating a payment gateway to convert fiat currency to crypto will enable users without prior crypto experience to contribute easily.
- **Analytics Dashboard**
Future updates can include detailed analytics for project creators and contributors, showing donation trends, engagement rates, and project milestones.
- **Smart Contract Upgradability**
Implementing proxy contracts or upgradeable smart contracts will allow the system to adapt to future requirements without redeploying the entire platform.

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