



Transforming Crowdfunding with Web 3.0 Blockchain

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Abstract:

Crowdfunding platforms face challenges such as high fees, lack of transparency, and centralized control. This paper presents a Web3-based decentralized crowdfunding platform leveraging Ethereum-based smart contracts, MetaMask wallet connectivity, and ThirdWeb for contract management to enhance security, transparency, and efficiency. The system automates fund collection, milestone tracking, and refunds, ensuring trustless and secure transactions. The project employs Solidity for smart contract development, React for frontend, and Node.js with Express for backend infrastructure. Our approach demonstrates how blockchain-based crowdfunding eliminates intermediaries, reduces costs, and increases trust between project creators and contributors.

Index Terms - Blockchain, Web3, Crowdfunding, Smart Contracts, Ethereum, Decentralized Finance (DeFi), MetaMask, ThirdWeb

1. INTRODUCTION

Crowdfunding enables project creators to raise funds globally but often involves **centralized platforms that impose high fees and lack transparency**. This paper introduces a **decentralized crowdfunding platform** using **blockchain technology** to address these limitations. The platform **eliminates intermediaries**, enabling direct and secure transactions through **Ethereum smart contracts**. Contributors can track transactions on the **immutable Ethereum ledger**, ensuring transparency. **MetaMask** provides secure authentication, while **ThirdWeb** simplifies contract deployment and security.

2.Literature Review

2.1 Challenges in Traditional Crowdfunding

- High Fees: Platforms like Kickstarter charge significant commissions [1].
- Lack of Transparency: Contributors lack visibility into fund allocation.
- Centralized Control: Platforms impose restrictions on campaigns.

2.2 Blockchain-Based Crowdfunding Solutions

- Smart Contracts: Automate fund distribution and refunds [2].
- Transparency: Transactions are immutable and verifiable [3].
- Decentralization: Eliminates reliance on third parties.

2.3 User Accessibility via Web3 Tools

- MetaMask Integration: Secure wallet authentication [4].
- ThirdWeb: Streamlines smart contract deployment [5].

3. Methodology

3.1 Technology Stack

- Blockchain: Ethereum (decentralized transactions)
- Smart Contracts: Solidity (automated fund handling)
- Frontend: React, Tailwind CSS (UI/UX)
- Backend: Node.js, Express (server API)
- Wallet Integration: MetaMask (secure authentication)
- Contract Management: ThirdWeb (smart contract security)

3.2 Security Considerations

- Smart Contract Audits: Conducted using Hardhat and Truffle.
- User Authentication: Wallet-based verification via MetaMask.
- Data Encryption: Ensures transaction security.

3.3 Workflow

1. User connects wallet via MetaMask.
2. Project creator launches a campaign with funding goals and timelines.
3. Backers contribute funds directly to the smart contract.
4. Funds are automatically released upon milestone completion.
5. Refunds are processed if goals remain unmet.

4. Expected Outcomes

- A fully decentralized crowdfunding platform eliminating intermediaries.
- Automated Fund Distribution through smart contracts.
- Enhanced Security & Transparency with blockchain immutability.
- User-Friendly Interface for seamless crowdfunding management.
- Scalability for Various Applications, including social initiatives and startups.

5. Conclusion

Blockchain-based crowdfunding enhances security, transparency, and efficiency by eliminating intermediaries and reducing costs. Our Web3 platform integrates smart contracts, MetaMask, and ThirdWeb to enable trustless and efficient crowdfunding. Future improvements will focus on cross-chain compatibility and layer-2 scaling solutions to reduce transaction costs and improve performance.

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