

DeKrypt- a Platform for NFT Marketplace and Crowdfunding

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Abstract - This proposed system delves into the design and development of a decentralized platform geared towards NFT marketplaces and crowdfunding campaigns, harnessing the capabilities of the Ethereum blockchain. The platform's central objective is to address and overcome the myriad challenges that have hindered the seamless adoption of NFTs and crowdfunding mechanisms. Reimagining the NFT marketplace and crowdfunding space, this platform places a strong emphasis on accessibility. This platform prioritizes a user-friendly interface, minting NFTs, buying and selling NFTs, participating in crowdfunding campaigns, and managing assets easily for users of all technical backgrounds. Through the introduction of distinctive features, this platform strives to provide a more enriching and secure experience, ensuring that everyone can take part in the ecosystem.

Keywords: Decentralized platform, NFT marketplaces, Crowdfunding campaigns, Ethereum blockchain, NFT.

I. INTRODUCTION

With the ascent of blockchain technology, the digital realm is undergoing a notable transformation. This emergence offers a novel platform for reimagining digital world concepts like ownership, trade, and collaboration. In this, many options have emerged - Non-Fungible Tokens (NFTs), crowdfunding, and decentralized applications (dApps). Fully Decentralized Trading Games [2] and according to Jason B. Cho, and Sven Serneels [7], these innovations have unlocked new possibilities for artists, creators, entrepreneurs, and communities, creating a digital renaissance. However, amidst this digital revolution, several pressing challenges have emerged. These challenges have created bottlenecks that need innovative solutions. In response to these challenges, we present a blockchain-based platform that amalgamates NFT marketplace features, crowdfunding capabilities, and community collaboration. Traditional methods of ownership, trading, and fundraising in the digital age have encountered a series of hurdles. NFTs, in particular, have experienced growing pains in their journey to widespread adoption. The primary issue revolves around scalability. The process of minting

and trading NFTs on popular blockchain networks often comes with a hefty price tag and sluggish transaction speeds. This dampens the enthusiasm of creators and potential buyers, as they find themselves burdened by high fees and time-consuming processes. The crowdfunding space shares a parallel narrative. Conventional crowdfunding platforms suffer from a lack of transparency and trust. There is often uncertainty about whether the funds raised will be utilized as intended. This platform seeks to unlock the full potential of NFTs and crowdfunding, making them more accessible, secure, and enriching for all users.

II. METHODOLOGIES

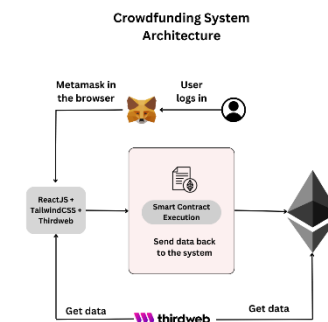


Fig. 1. Crowdfunding Architecture

Fig.1 shows the architecture of Crowdfunding system. At the front-end, ReactJS and Tailwind CSS are employed to craft an intuitive and visually appealing user interface. ReactJS provides a dynamic and responsive frontend framework, allowing for seamless navigation and interaction, while Tailwind CSS facilitates rapid styling and customization, ensuring a polished and cohesive design. To enable transactions and interaction with the Ethereum blockchain, users are required to connect their MetaMask wallet. MetaMask serves

as a bridge between the user's browser and the Ethereum network, allowing for secure authentication and transaction signing. Through MetaMask, users can seamlessly manage their Ethereum assets, including Ether (ETH) and ERC-20 tokens, and engage in crowdfunding activities directly from their browser. In the intermediary layer, smart contracts are executed using Solidity code on the Ethereum blockchain. Smart contracts are self-executing contracts with predefined rules and conditions encoded into their code. In the context of crowdfunding, smart contracts govern the fundraising process, including accepting contributions, managing campaign parameters, and distributing funds to project creators. Through Solidity code, developers define the logic and behavior of these smart contracts, ensuring transparency and security for execution of crowdfunding campaigns.

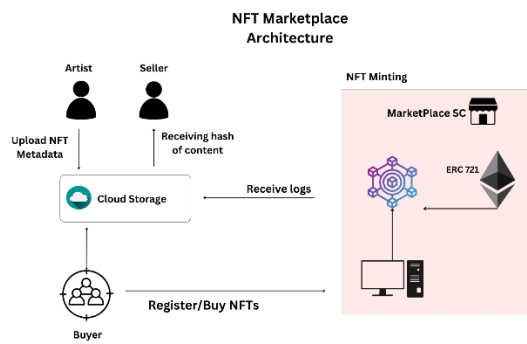


Fig. 2. NFT Marketplace Architecture

Fig.2 shows the architecture of the NFT Marketplace, which serves as the backbone for governing NFT creation and transactions within the platform. When a user initiates the minting process for an NFT, a specific function within the corresponding smart contract is triggered on the Ethereum blockchain. This function records all pertinent details related to the newly created NFT, such as its metadata, ownership information, and transaction history. These smart contracts enforce the rules and conditions set forth by the platform, ensuring the integrity and authenticity of NFTs traded within the ecosystem. Users interact with the NFT Marketplace through a user-friendly interface provided by the platform. This interface allows users to browse, buy, sell, or trade NFTs

seamlessly, abstracting away the complexities of interacting directly with Ethereum smart contracts. When users engage in transactions, such as purchasing an NFT or transferring ownership, these actions are facilitated by executing corresponding functions within the smart contracts. The system orchestrates these transactions in a secure and efficient manner, leveraging Ethereum's blockchain features, such as immutability, transparency, and decentralization.

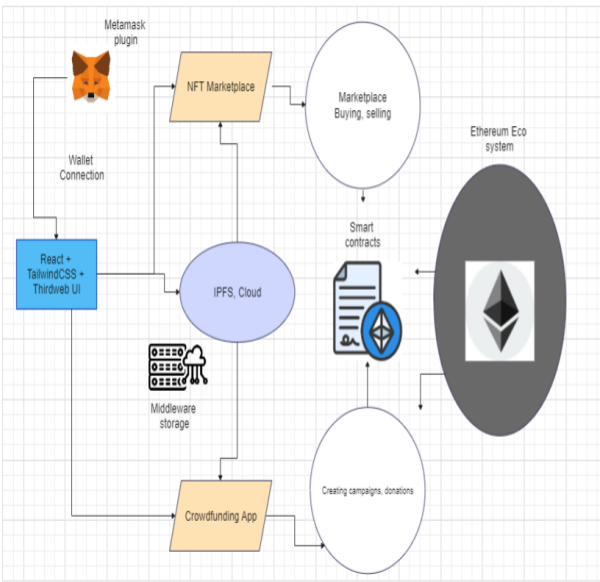


Fig. 3. Unified Architecture

Fig.3 provides the combined architecture for both the NFT marketplace and crowdfunding system, the backbone consists of Ethereum smart contracts that manage NFT creation and transactions as well as crowdfunding campaigns. Users can create NFTs and crowdfunding campaigns through the platform, resulting in the execution of corresponding smart contracts on the Ethereum blockchain. This unified system endows users with a suite of indispensable features, including robust scalability, security measures, and an intuitive, user-centric interface. The culmination of these attributes promises to herald a new era in the realm of decentralized marketplaces and funding platforms, empowering users with unprecedented accessibility and efficacy.

III. LOGIC FLOW

The logic flow refers to the sequence of steps and decision points that guide the project from initiation to completion. It outlines the logical progression of activities and tasks to achieve the project's goals.

A. Crowdfunding Logic Flow

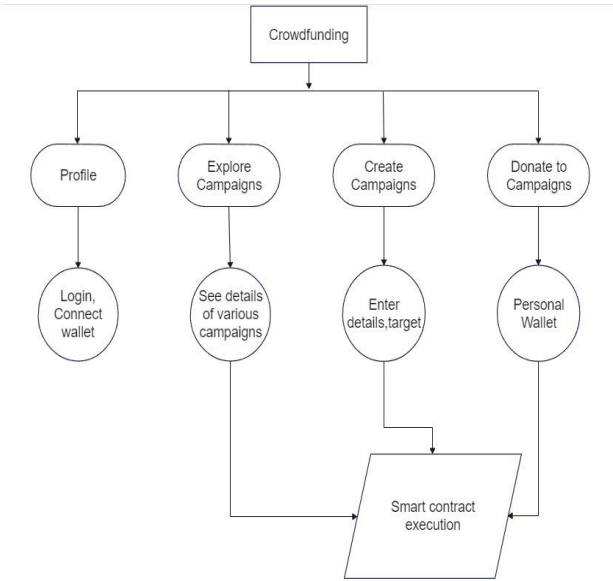


Fig. 4. Crowdfunding Logic Flow

In Fig.4, the process begins with a user creating a campaign on the platform. The campaign data is then stored to Interplanetary File System (IPFS), a decentralized peer-to-peer file sharing system, commonly used in blockchain domain. Contributors pledge funds to the campaign through the platform's user interface. The smart contract manages the funds, releasing them to the project only when predetermined criteria, such as funding targets and timelines, are met.

B. Marketplace Logic Flow

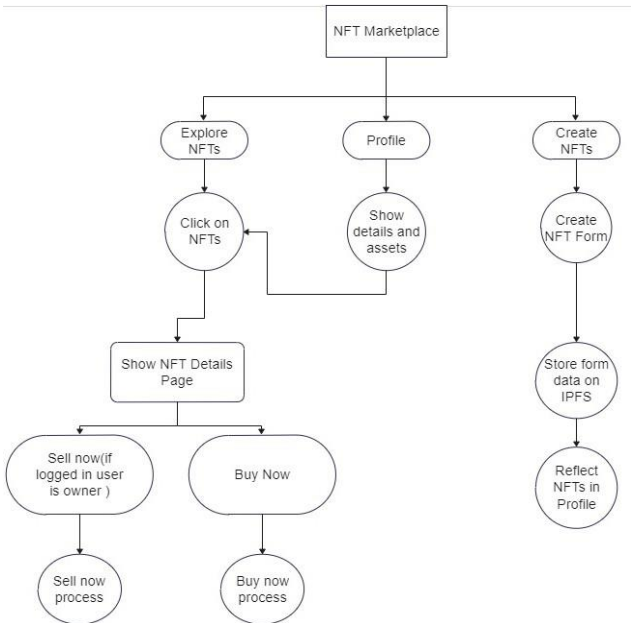


Fig. 5. Marketplace Logic Flow

Fig.5 shows the flowchart for the NFT marketplace, the process commences with a user choosing to mint an NFT on the platform. This initiates the execution smart contract. Buyers and sellers interact through the user-friendly interface, executing transactions through these smart contracts.

IV. RESULTS

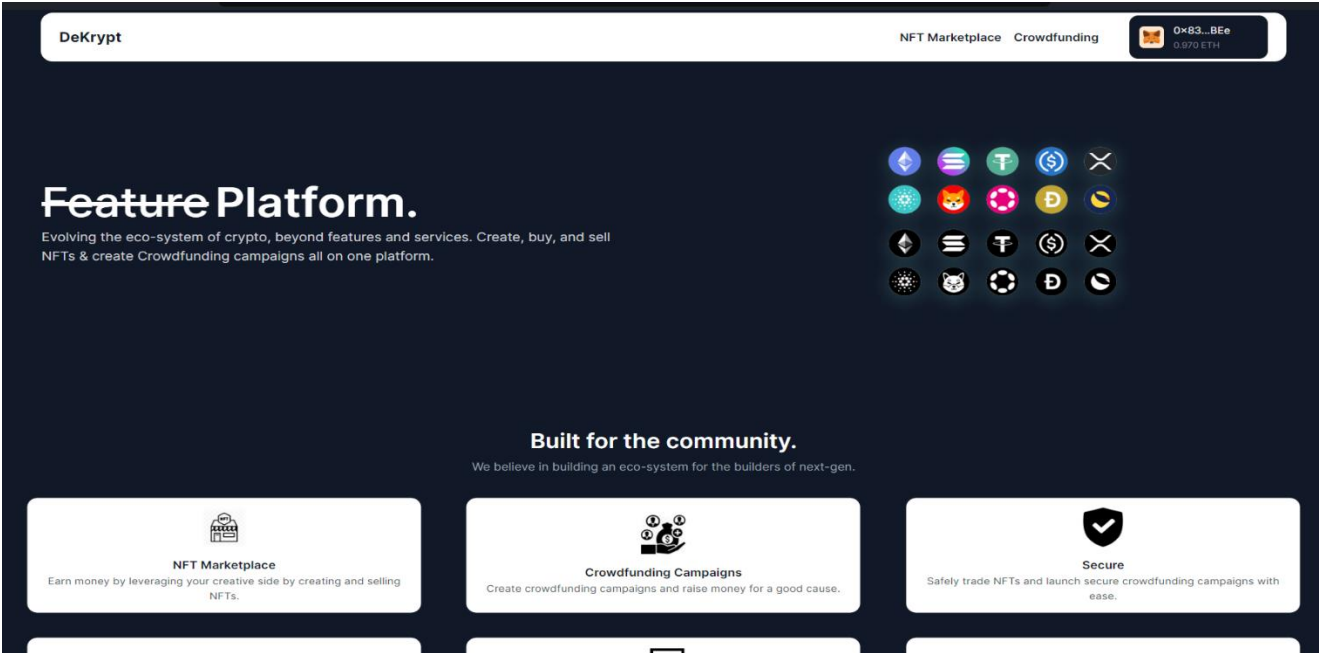


Fig. 6. DeKrypt Homepage

Fig.6 describes the homepage of the platform which is meticulously designed to be fully responsive across all devices. Whether accessed on a desktop computer or mobile phone this homepage seamlessly adapts to different screen sizes and resolutions, ensuring a consistent and optimized user experience for all visitors. This responsiveness enhances usability and accessibility, allowing users to engage with the platform effortlessly regardless of their preferred device. The platform features clear navigation options between the marketplace and crowdfunding sections, utilizing intuitive icons or buttons for user interaction. Here, the option for connection of wallet is provided for seamless transactions across the website. Responsive design principles ensure an optimal user experience across various devices.

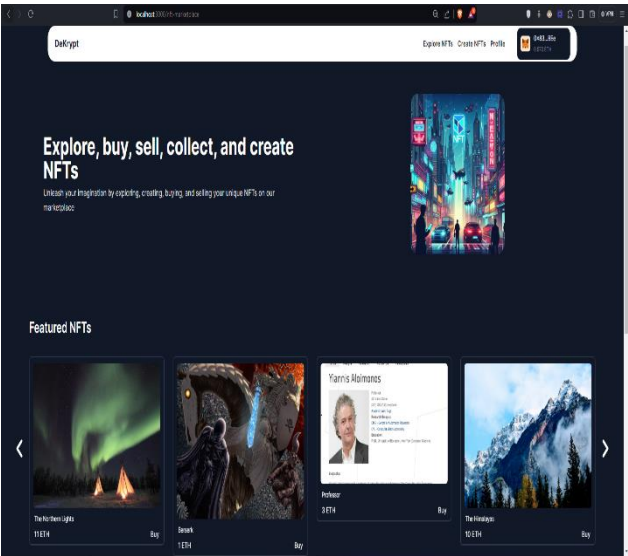


Fig. 7. NFT Marketplace

Fig.7 shows the platform which boasts an intuitive navigation structure meticulously crafted to guide users seamlessly through their digital journey. Clear calls-to-action beckon users to explore the curated selection of featured NFTs, enticing them to delve deeper into the diverse collection of digital assets. With just a few clicks,

users can immerse themselves in a world of creativity and innovation, discovering unique artworks, collectibles, and digital memorabilia.

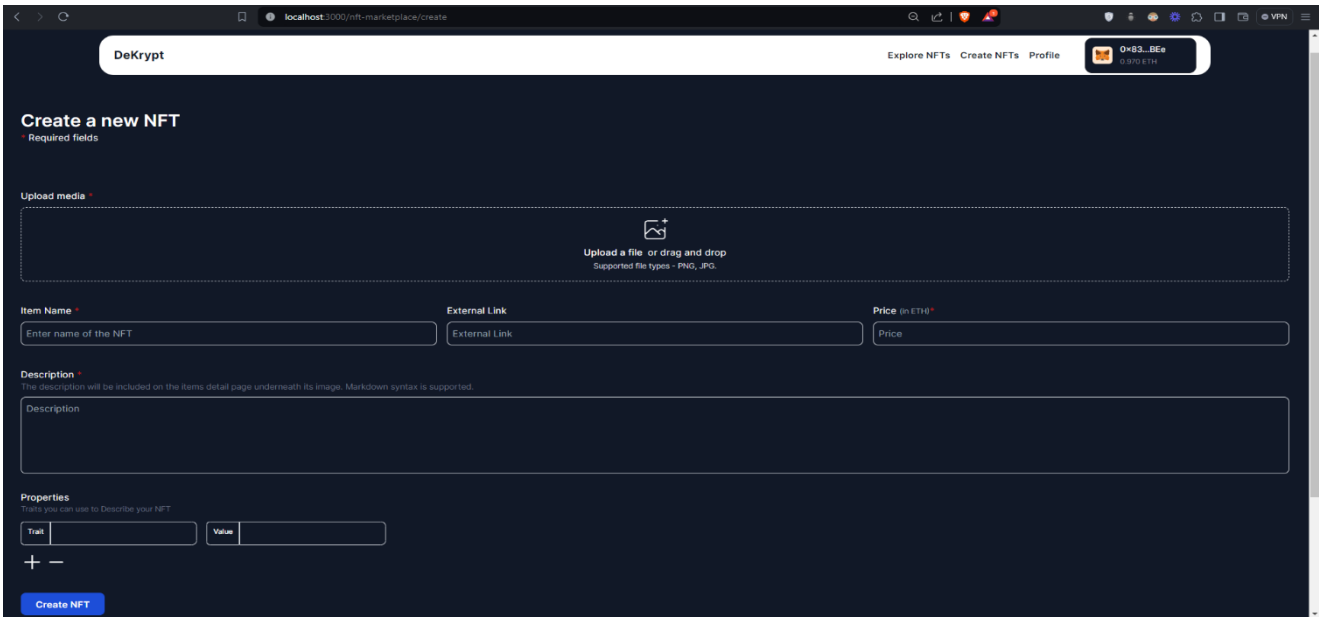


Fig. 8. Creation of NFT

Fig.8 shows the form for creating NFTs on the platform ensuring a seamless process from inception to listing. The form includes several key fields to capture essential details about the digital asset being minted. Users begin by uploading the media file that will serve as the NFT in jpg, png formats. They then provide a concise yet descriptive item name, offering potential buyers insight into the essence of the NFT. Additionally, users have the option to include an external link related to the NFT, providing additional context or background information. Next, users specify the price of the NFT in Ethereum, enabling seamless transactions within the Ethereum blockchain ecosystem. A detailed description of the NFT allows creators to share insights into its creation process, inspiration, or significance, enhancing its appeal to potential buyers. Finally, users can define any unique properties, traits, or values associated with the NFT, such as rarity or special features, adding depth and value to their creation. Through this comprehensive form, creators can effectively showcase their digital assets and monetize their creativity within the decentralized digital marketplace.

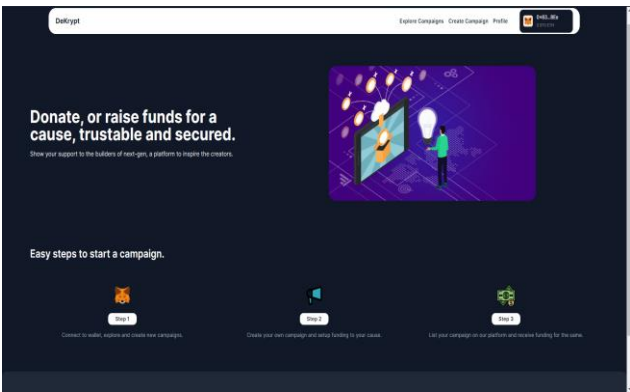


Fig. 9. Crowdfunding Homepage

Fig.9 depicts the homepage of the platform that serves as a visual roadmap, guiding users through the process of launching a crowdfunding campaign with ease and clarity. By incorporating intuitive design elements and clear navigation cues, we aim to create a supportive environment that empowers artists and creators to bring their projects to life. The seamless integration of crowdfunding alongside NFT marketplace introduces a novel dimension to the platform, offering creators a comprehensive suite of tools to fund, promote, and distribute their work. Through visually engaging elements and informative sections, users are

encouraged to explore the crowdfunding process step-by-step, from project conception to campaign launch. By fostering transparency, accessibility, and community engagement, this platform empowers creators to unlock new opportunities and realize their creative visions in a dynamic and collaborative digital ecosystem.

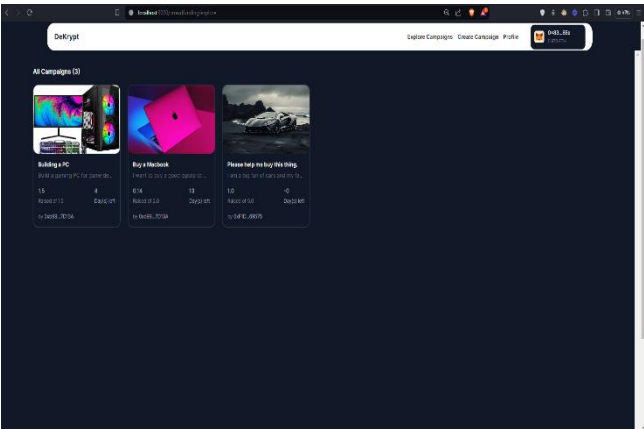


Fig. 10. Explore Crowdfunding Campaigns

Fig.10 depicts the Crowdfunding campaigns that are listed on the platform. Each campaign page offers a wealth of details, including project descriptions, creator profiles, funding goals, and the status of donations. Additionally, the inclusion of a progress bar provides real-time updates on the campaign's funding status, allowing backers to track its trajectory and gauge community support.

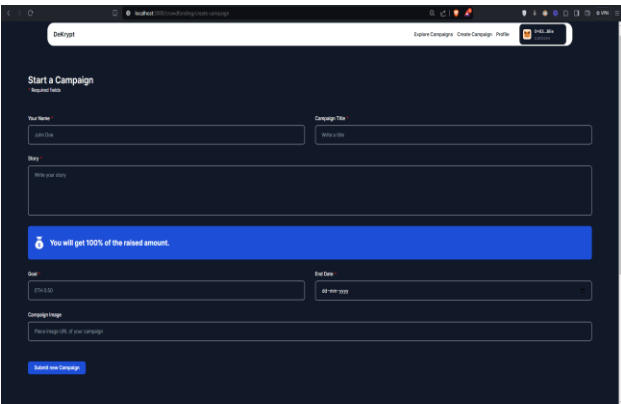


Fig. 11. Starting a Campaign

Fig.11 depicts the creation of crowdfunding campaign form which includes details such as the campaign name, category, and a concise project

description. Clear sections for setting the funding goal and campaign duration, allowing creators to articulate their financial needs and establish a timeline for their project. Dedicated sections for creators to upload compelling visual assets, including images to enhance the attractiveness of their campaign.

V. PERFORMANCE

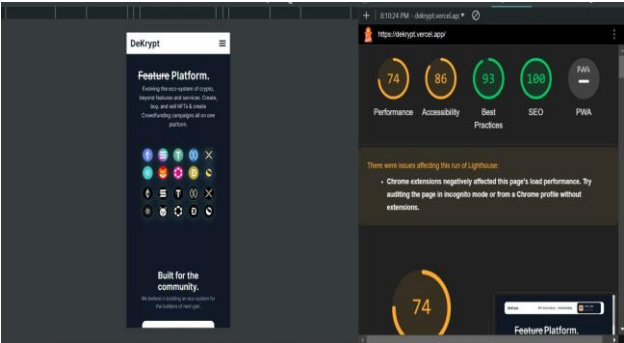


Fig. 12. Performance of Platform

A. Performance (74/100)

The Platform demonstrates commendable performance. This score reflects a solid foundation of functionality and efficiency, indicating that the platform operates smoothly and effectively in serving its users. While there is room for further enhancement, this performance rating underscores the platform's commitment to delivering a reliable and responsive user experience. With strategic optimizations and continued focus on performance, DeKrypt is poised to elevate its capabilities and exceed user expectations in the ever-evolving digital landscape.

B. Accessibility (86/100)

Accessibility measures how easily people with disabilities can access and use the platform. A good accessibility score indicates that the platform is relatively inclusive and provides a good user experience for individuals with disabilities.

C. Best Practices (93/100)

Best practices encompass adherence to industry standards, coding conventions, security protocols, and design principles. A score above 90 suggests that the platform largely follows recommended practices in terms of development, security, and

design. This indicates a high level of professionalism and attention to detail in the development process.

D. SEO (100/100)

SEO (Search Engine Optimization) measures how well the platform is optimized for search engines, ensuring that it ranks high in search results and attracts organic traffic. This perfect score of 100 out of 100 indicates excellent optimization efforts, resulting in maximum visibility and discoverability online. Achieving a perfect SEO score suggests that the platform has implemented effective strategies such as keyword optimization, meta tags, mobile responsiveness, fast loading times, high-quality content, and backlinking, among others. This can lead to increased traffic, engagement, and conversions.

VI. CONCLUSION

In a world that's all about going digital, the system proposed in this paper is a game-changer. This system has put together a one-of-a-kind platform that mashes up NFTs, crowdfunding, and teaming up with others, all on the Ethereum blockchain. There are two big challenges in our way: making things work faster and cheaper and making it easy for regular folks to join the party. Leveraging the advantages of blockchain infrastructure on the technical side, this system uses Ethereum's special tech, like smart contracts, to make sure everything is safe and sound. The smart contracts handle things like NFT trading and crowdfunding campaigns. This platform is a place where artists, creators, and regular folks can team up, trade NFTs, and support each other's projects. On the other hand, users can easily, and seamlessly initiate crowd fundraising campaigns and donations can be made with trust. As we look to the future, we're excited about what's to come. This system isn't just about technology; it's about bringing people together in this digital world. The proposed system tries to make NFTs and crowdfunding easy and fun for everyone.

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