Cryptoroots: Offset your Carbon Footprint by Planting Trees and Earn Climate Change Impact Badges.

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Abstract - #TEAMTREES, Team Trees is a joint fundraising campaign launched by the famous YouTubers MrBeast and Mark Rober to plant 20 million trees. By the end of 2019, the #TEAMTREES initiative had garnered significant backing from YouTubers and successfully raised 20 million US dollars. The raised funds from the initiative are donated to the Arbor Day Foundation, which is committed to planting trees and planting one tree for every dollar received. CryptoRoots is a new platform that aims to allow anyone to contribute to tree planting and earn NFTs for promoting climate change awareness. Every dollar donated through the platform will lead to planting one tree, with all earnings going to support #teamtrees. For transparency, CryptoRoots will also provide donation receipts on its platform, showing users the power consumption of NFT transactions via API. The platform will allow users to track the number of trees planted, the area covered, and reverse carbon emissions, among other metrics. To ensure scalability and reduce gas fees, our platform is deployed on Polygon. In short, CryptoRoots is a unique platform where users can contribute to tree-planting efforts using cryptocurrencies and earn NFT tokens to promote climate change awareness.

Index Terms - Crowd Funding, Climate Change, Ethereum DApp, ERC-1155, Chainlink, Plant Trees, Non-Fungible Tokens (NFT), MATIC, Polygon Network

I. INTRODUCTION

#TEAMTREES, or Team Trees, is a collaborative fundraising initiative that successfully raised US 20 million dollars intending to plant 20 million trees. MrBeast and Mark Rober were the founders of this project and received significant support from the YouTube community, including various YouTube personalities. Our CryptoRoots platform is a non-profit organization that acts as a supporting entity for the #teamtrees initiative. Instead of donating directly to #teamtrees, users can donate to CryptoRoots and receive NFTs for climate change awareness. 100% of donations will still go to #teamtrees. Donation receipts posted on our platform will be proof of donations to #teamtrees. The platform encourages everyone to be carbon neutral. Our platform has a tracking system that shows how many trees have been planted from user donations, how much area these trees have covered, how much carbon emissions have been reversed and much more. CryptoRoots is a blend of technology and climate change awareness.

II. LITERATURE SURVEY

The literature survey includes detailed case studies related to our project's idea. The first paper [1] discusses social media campaigns and their use in informing the public about global issues and challenges. Hosts and participants of these campaigns use social media platforms to coordinate and implement their efforts, thereby enhancing or supporting campaign goals. The second paper [2] compares the success factors of blockchain-based crowdfunding with conventional fundraising practices and discusses alternative fundraising. In comparison, the paper views blockchain-based crowdfunding as an emerging and rapidly growing economic phenomenon, representing a modern approach to business financing when compared to traditional financing systems. The third paper [3] explores how non-fungible tokens (NFTs) can add value to brands and have the potential to become valuable brand assets on their own. The fourth paper [4] discusses the impacts of climate change on forest planting, focusing on the potential direct and indirect effects of the climate change on the forest planting industry. The fifth paper [5] discusses two different types of NFTs, ERC721 and ERC1155, and explores them as a new form of cryptocurrency that has gained significant attention since their creation. The sixth paper [6] explores the implementation of blockchain technology in smart communities and examines its key components. It also analyses the different process models used to ensure secure transactions.

III. ABOUT TEAMTREES

Team Trees, popularly known as #TEAMTREES, is a collaborative fundraising project that has raised $20 million US dollars to plant 20 million trees. The initiative was started by the popular YouTubers Mark Rober and MrBeast, and it was mostly supported by YouTubers. All funds raised are donated to the Arbor Day Foundation, which is an organization that promotes and is dedicated to tree plantation and commits itself to plant one tree for every dollar donated. According to estimation, 23 million trees would cover approximately 210-kilometer sq. of land which absorbs about 1.6 million tons of carbon and removes 116 thousand tons of air pollution from the atmosphere. By August 2022, the project surpassed the fundraiser's goal of planting 20 million trees and had raised more than $23.9 million, and more than 19 million trees have been planted currently to date. The trees will be planted in various forests on public and private lands in areas of high need.

The idea started on 24th May 2019, when a Reddit fan suggested "MrBeast" (Jimmy Donaldson) plant 20 million trees to celebrate reaching 20 million YouTube subscribers. The idea spread across all the social media platforms like: YouTube, Reddit, and Twitter, in the form of memes. The wildfires in the Amazon rainforest in 2019 may have inspired the idea. Soon after this thing started getting

more attention, another American YouTuber, "Mark Rober" contacted Donaldson directly to start the fundraising project. On 25th October 2019, Donaldson uploaded a YouTube video explaining his plan, which went to #1 trending on the YouTube page and prompted many other YouTubers to join the movement. Notable YouTubers and many Jaiden Entrepreneurs also contributed to and promoted the campaign.

IV. CRYPTOROOTS.XYZ

cryptoroots.xyz is a platform that allows users to offset their carbon footprint by planting trees ($1 = 1 tree) and earn ERC-1155 powered climate change impact badges. It looks forward to unlocking the true potential of NFTs. CryptoRoots is a non-profit organization that acts as a boosting entity for the initiative of #teamtrees. Users instead of donating directly to #teamtrees can donate to CryptoRoots and earn NFTs for climate change awareness. 100% of the donations will still be transferred to #teamtrees. Donation receipts that will be released on our platform will be proof of the donations to #teamtrees. The platform is designed to encourage everyone to go carbon neutral. Our platform has a tracking system that shows how many trees have been planted by user donations, how much area has been covered by those trees, how much carbon emissions have been reversed, and much more. CryptoRoots is a blend between technology and awareness of climate change.

The flowchart presented below illustrates the features and services offered by our application.

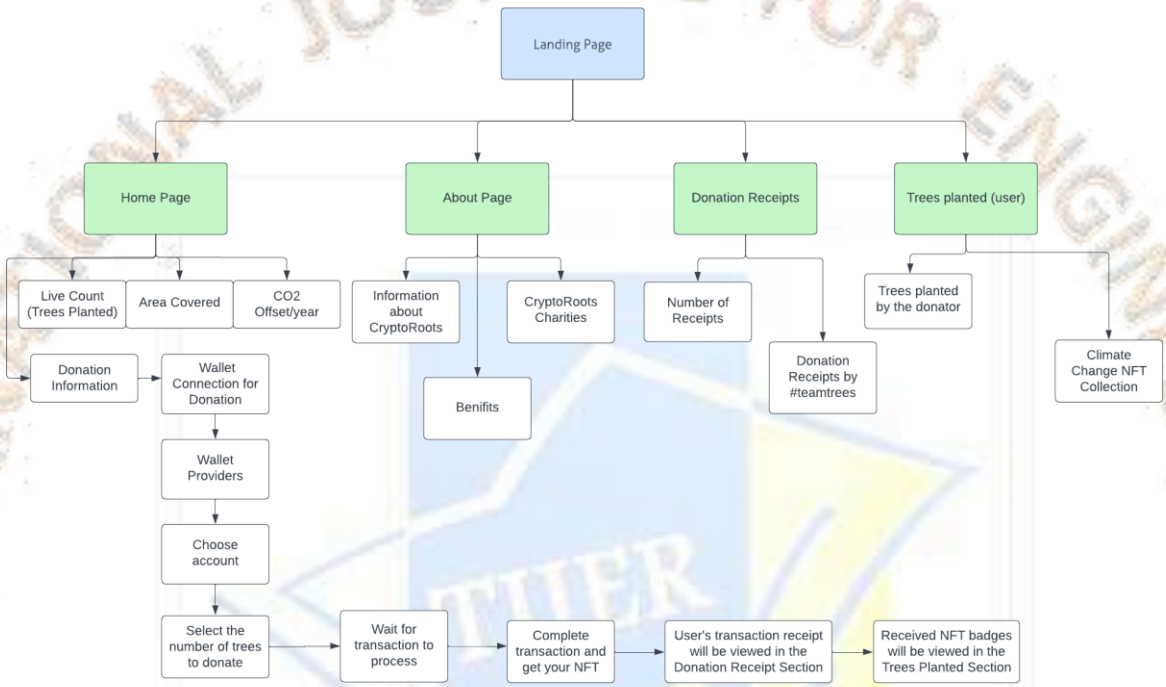

Fig.1 Flowchart of designed system.

V. PROPOSED METHODOLOGY

We utilized these technology stacks for the development of our project.

(1) ERC-1155

In our fundraising project, we are using a smart contract that utilizes the ERC-1155 standard. This means that users can donate 1, 5, 10, or 20-dollar equivalents of MATIC, represented as ERC-1155 tokens in the smart contract. When a user donates, the smart contract mints the appropriate number of tokens and sends them to the user's wallet. Each donation amount is represented as a unique token, making it easy for us to keep track of the number of tokens issued for each donation level. As a symbol of participation, we are also offering badges to donors, which are represented as NFT tokens. The badge is minted based on the donation amount, so if someone donates 5-dollar equivalents of MATIC, they will receive a badge that represents their donation to the community and their effort towards tree plantation and climate change awareness. The badge is unique to the donor and can be viewed in their wallet. Using ERC-1155 tokens in our smart contract makes it easy for us to manage donations and issue personalized rewards to donors. Plus, it integrates well with existing crypto wallets and platforms that support the ERC-1155 standard, so it's easy for users to donate and receive their rewards.

(2) Web3.js

We are using Web3.js to interact with the smart contract that's deployed on the Ethereum blockchain. With Web3.js, we are able to create a user-friendly interface that allows donors and other users to easily view information about their donations and any rewards they receive. One of the key features of the smart contract is the ability to mint NFTs, or non-fungible tokens, that represent the trees that are planted through fundraising efforts. And with Web3.js, we are able to enable donors to easily view the NFTs they've earned as a tangible reminder of their contribution to the environment. Web3.js fetches data from the smart contract. This means that donors can see information about the number of trees that have been planted, the amount of land those trees cover, and the carbon offset that they generate. This is really important because it allows donors to see the impact that their contributions are having on the environment in real time. The entire project is completely decentralized. This means that it's run on a network of computers that are connected to the Ethereum blockchain, which makes it secure and resistant to censorship. Overall, using Web3.js and a decentralized smart contract on

the Ethereum blockchain allows us to create a transparent and secure platform that lets donors and other users track the impact of their contributions to the environment.

(3) Chainlink

Chainlink helps us with the real-time conversion of our cryptocurrency. Chainlink is a decentralized oracle network that allows our smart contracts to securely access external data sources, including real-time price feeds for various cryptocurrencies. By using Chainlink, we're able to ensure that our donation platform is always up-to-date with the latest exchange rates, which means that donors can easily convert their dollars to the equivalent amount of MATIC tokens in Polygon for donation on the Ethereum blockchain. This is really important because it means that donors don't have to worry about manually converting their currency or missing out on donations due to fluctuating exchange rates. Chainlink provides a secure and reliable way to obtain price feeds for different cryptocurrencies in real time. This is important because it helps to prevent any errors or inaccuracies that could arise from relying on a single centralized data source. With Chainlink, we can be confident that the conversion rates we're using are accurate and up-to-date, which is essential for ensuring that our fundraising platform is transparent and trustworthy. By leveraging Chainlink's decentralized oracle network, we're able to provide a seamless experience for donors who want to convert their dollars into MATIC tokens for donation on the Ethereum blockchain. We can also be confident that the data we're using is secure and reliable, which is essential for maintaining the trust of our donors and users.

(4) Polygon

We're using the Polygon network to deploy our smart contracts and handle transactions. The reason we chose to use Polygon is that it offers faster and cheaper transactions compared to the Ethereum network, which is where our fundraising platform is based. One of the biggest challenges we faced when building our platform was the high gas fees associated with using the Ethereum network. Gas fees are the transaction fees required to execute smart contracts on the Ethereum network, and they can be quite expensive during times of high network congestion. This can be a significant barrier for donors who want to contribute to our cause but are deterred by the high fees. By using Polygon, we're able to offer our donors a more cost-effective solution. Because Polygon uses a different consensus mechanism than Ethereum, the gas fees associated with transactions on the network are much lower. This means that our donors won't have to pay the high gas prices associated with the Ethereum network, making it easier for them to donate to our cause. In addition to lower gas fees, the Polygon network also offers faster transaction times compared to Ethereum. This is because the network is designed to handle a higher volume of transactions, which means that transactions are confirmed and processed more quickly. Overall, by using the Polygon network, we're able to provide our donors with a more cost-effective and efficient way to donate to our cause. This helps to make our platform more accessible and inclusive, which is essential for promoting engagement and building a strong community around our cause.

VI. CONCLUSIONS

In conclusion, we were able to successfully design and develop the CryptoRoots platform, which allows users to donate to the cause and earn NFTs for promoting climate change awareness. This collaboration can make people aware of the offsets of their carbon emissions by planting trees, making a significant impact. The platform also serves as a global community-building tool where people can get access to conferences with CryptoRoots NFT badges as tickets.

VII. REFERENCES

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