

# Web 3.0 application using blockchain

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**Abstract:** Smart contracts are simply programs stored on a blockchain that run when predetermined conditions are met. They typically are used to automate the execution of an agreement so that all participants can be immediately certain of the outcome, without any intermediary's involvement or time loss. They can also automate a workflow, triggering the next action when conditions are met.

After the 2020 pandemic, everyone realized that the collaborations which were being done offline had to go online. This created a stir among the community as there was no legal bond between the two entities working together. Be it a large company working for another one or an individual working as a contractor. Smart contracts are computer protocols intended to digitally facilitate, verify, or enforce the negotiation or performance of a contract. Smart contracts have a broad range of applications, such as financial services, prediction markets, and Internet of Things (IoT), etc. In this paper, we propose how we use blockchain technology and utilize the built-in feature of the blockchain technology called smart contracts to create an agreement between two entities which is then automatically executed/initiated whenever the conditions or the requirements of the contract are met. This makes everything transparent between the contractors which in turn eliminates the need for a third person to testify or the need of depending and trusting the contractor or anyone. This also creates micro-collaborations much easier as it saves time and money spent behind a lawyer to register a company for a trivial collaboration. Smart contracts can be made based on the requirements. This is a decentralized application built using react and solidity.

## I. INTRODUCTION

In web3, developers don't usually build and deploy applications that run on a single server or that store their data in a single database

Instead, web3 applications either run on blockchains, decentralized networks of many peer to peer nodes (servers), or a combination of the two that forms a [cryptoeconomic protocol](#). These apps are often referred to as dapps (decentralized apps), and you will see that term used often in the web3 space.

- Let me explain how the application will work that we'll build and implement web3 into react application make it send transactions through the blockchain and then store those transactions and show them right inside our application
- We'll create a React.js application that will talk directly to the smart contract on the blockchain. We'll use the Ethereum blockchain, which we can access by connecting our client side application to a single Ethereum node. The smart contract written in Solidity will power the backend. We'll connect to the blockchain network with our personal account using an Ethereum wallet in order to interact application that we'll create.

## II. THEORY AND ARCHITECTURE

**BLOCKCHAIN:-**A **blockchain** is a growing list of records called *blocks*, that are linked together using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data. The timestamp proves that the transaction data existed when the block was published in order to get into its hash. As blocks each contain information about the block previous to it, they form a chain, with each additional block reinforcing the ones before it.

- Data stored in blockchain is immutable and cannot be changed easily
- Blockchain is Decentralized as well as an open ledger.
- Blockchain provide a peer to peer network.
- Complete transaction history
- Blockchain tend to have better security because there is no single point of failure to shut down the network
- Transparency

## III. EXISTING SYSTEM

1. Websites exist where user can upload an image to the blockchain network as an NFT or Non-Fungible Tokens.
2. The images are tokens placed on the marketplace to be traded and are auctioned to the highest bidder if it is more than the asking price.

3. Payments are processed through a payment gateway which is based on the blockchain network used.

#### IV. PROPOSED SYSTEM

A blockchain is essentially a distributed digital ledger of transactions [2] that encompasses the whole network of computers. It is dispersed, which means it does not require a central authority to function. Bitcoin was the first cryptocurrency to leverage blockchain technology. Leveraging this technology, we can implement a system that provides ease of Contract creation between users and also provide Transfer of assets between users. As Blockchain is Immutable, Data present can hold a value which in turn helps companies to maintain a solid track of their history. An End-to-End contract between an Employee and company can be formed which is accepted by both parties and eliminates the interference of any third party for verification purposes as Blockchain is a Public Ledger. Government Can use this data to keep track of Property sale deeds for taxation purposes and Users can also use this platform for buying and selling Property documents and transferring ownership of land assets in real life. This helps users avoid visiting Registration offices and going through a load of paperwork with the help of blockchain technologies. All transactions are done using Cryptocurrencies which makes transactions substantially secure and faster.

#### Ethereum

Ethereum is a community-run technology software platform that allows for the creation and deployment of hundreds of decentralized apps. Blockchain technology underpins Ethereum. It's a blockchain with a Turing-complete programming language built right in. It has an abstract layer that allows users to design their ownership, transaction formats, and state transition techniques. Smart contracts, which are a collection of cryptographic rules that are only executed if specified terms are met, are used to do this [6]. Furthermore, a platform like this serves as the foundation for a virtual currency called Ether, which is a financial asset used on the Ethereum blockchain. In some ways, Ether serves as the fuel for Ethereum's distributed applications. This currency can be used to pay money to other accounts or machines that do specific tasks. As a result, Ether may be used to run decentralized apps, construct smart contracts, produce tokens, and conduct regular peer-to-peer payments. Ethereum is hence referred to as "programmable currency" [7]. EOA and Contract are the two components of Ethereum. A private key controls the EOA, whereas contract accounts are controlled by contract code.

#### Smart contracts

Szabo first proposed smart contracts as a way of speeding up, validating, and executing digital agreements. Ethereum is a blockchain platform that uses powerful smart contracts. Smart contracts on the blockchain make use of

To ensure ultimate consistency, Turing-complete scripting languages and stringent state transition replication through consensus methods are used to conduct complex tasks. Smart contracts allow unidentified parties and dispersed participants to perform fair transactions without the use of a trusted third party, and they also provide a consistent framework for developing applications in a variety of industries. State-transition methods help apps that run on top of smart contracts.

#### Transactions

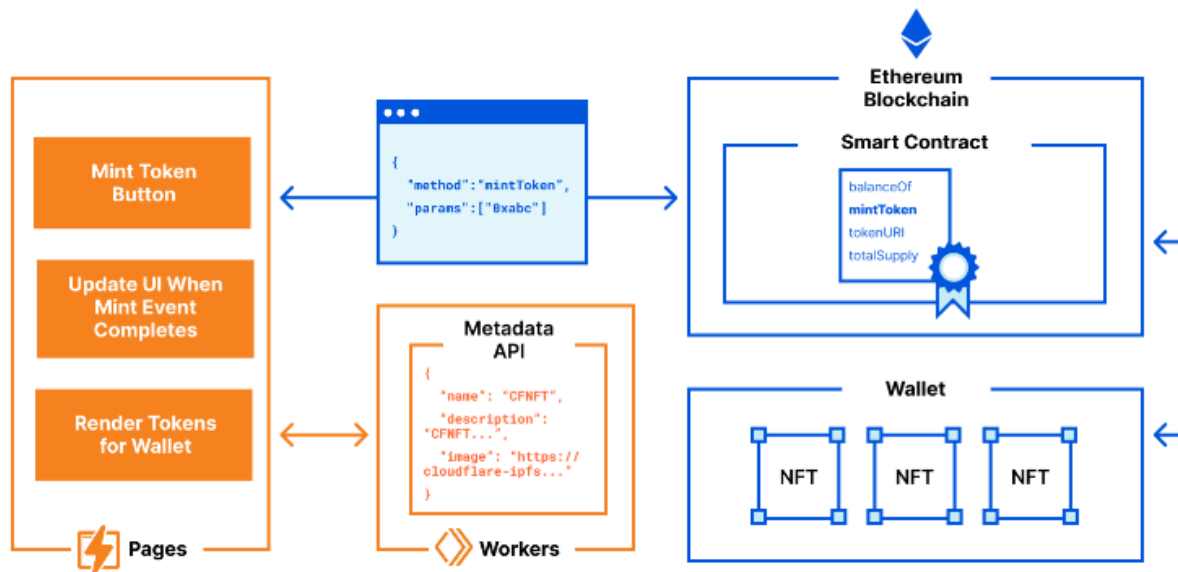
In cryptocurrencies, blockchain addresses and transactions are fundamental notions. A blockchain address is a unique identifier that allows a user to send and receive assets, similar to how a bank account works when using cash. It's made up of a string of alphanumeric characters that are generated by a pair of public and private keys. To send NFTs to another address(es), the owner must show that he or she has the right private key and use a valid digital signal.

#### Tools

- React Js (User Interface)
- Tailwind (Utility CSS framework)
- Ropsten Ethereum Faucet (Provides with test Ethereum free of charge)
- Hardhat (Ethereum development environment)
- Alchemy (Help us Deploy our blockchain smart contract)
- Microsoft Visual Studio Code Lab (IDE)
- Solidity for writing smart contracts.

#### Building

- Planning(1weeks)
- Learning (2weeks)
- Development(2weeks)
- Testing(1week)
- Deploying



## V. CONCLUSION

In this paper, we planned and built a system wherein users can store their sold and purchased NFT or cryptocurrency with any gateway and secure make transactions. Enabled the users to upload their contracts on the blockchain as an NFT and built a smart contract that splits their payment.

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