



# Genft : NFT Generator for crypto trading

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**ABSTRACT** - Recent years have seen a rapid expansion of the Non-Fungible Token (NFT) sector. The idea behind NFT was inspired by an Ethereum token standard that sought to identify each token by a distinctive sign. As part of unique identification, virtual or digital qualities are tied to NFTs. Using NFTs all properties that have been tagged can be freely exchanged with values depending on their ages, rarity, liquidity, and other criteria. On the Namecoin blockchain, Kevin McCoy created the first-ever NFT in 2014, which he called "quantum." In the year 2021, his NFT—a work of art that had been first criticized—was sold for \$1.4 million at the Sotheby's Native Digital auction. It is now considered to be historical piece artwork. These days, well-known NFT collections include Bored Ape Yacht Club, Azuki, CryptoPunks. NFTs, like stocks, can signify ownership in an organization. NFTs can be issued to represent shares in the same way that stocks can be issued since blockchain is a distributed and secure record. Our application is one of the decentralized applications which lets users generate unique and rich NFTs from preloaded templates and trade them for ETH on our proprietary marketplace called the Genft marketplace. It is a form of digital asset which can be exchanged for crypto-currency like Ethereum.

**Keywords** – NFT- Non-Fungible Token, Ethereum, crypto-currency, token, blockchain.

## I. INTRODUCTION

A blockchain is a distributed ledger with growing lists of records (blocks) that are securely linked together via cryptographic hashes [2]. Each block includes the timestamp, a cryptographic hash of the previous block, and details about the transaction. (typically depicted as a Merkle tree, where the leaves represent the data nodes.). The inclusion of a timestamp in a block on the blockchain serves as evidence that the transaction data already existed at the time of the block's creation. The blockchain's blocks are organized into a chain-like structure, like a linked list data structure in that each block contains details about the one before it, creating a linear chain of blocks. This property makes blockchain transactions immutable since any attempt to alter the data in a particular block would require changing all subsequent blocks in the chain as well, making retrospective changes impossible.

The first decentralized blockchain was conceptualized by a person (or group of people) known as Satoshi Nakamoto in 2008 [7]. With regards to the blockchain architecture, Nakamoto introduced the idea of timestamping blocks without the requirement for external authentication. This was done using a technique similar to HashCash. Nakamoto also added a difficulty option to control how frequently blocks are added to the chain. The year after, Nakamoto implemented this idea as a critical element of the cryptocurrency bitcoin, which now serves as the network's central public ledger for all transactions.

Decentralised apps, or dApps, work by interacting with the blockchain, which keeps track of the current state of every user on the network. Despite having a blockchain foundation, dApps resemble modern websites and mobile applications in terms of their user experience. The core functionality of a decentralised application is represented by a smart contract. Smart contracts are components of the blockchain that can process data from external events or sensors, to help the blockchain in managing the state of all participants in the network [8]. Smart contracts are typically used to automate contract execution, eliminating the need for intermediaries and saving time for all parties involved. This enables all parties to have immediate trust in the outcome. They can also automate a workflow such that it moves on to the following stage when certain criteria are satisfied.

The frontend of a decentralized application is what you see, and the backend is all the business logic. To express this business logic, one or more smart contracts communicate with the underlying blockchain.

The primary distinction between centralized and decentralized applications is Traditional web pages depend on an API to manage and obtain user data and other pertinent information held by their servers in order to publish it on the webpage [2]. Due to the fact that personal data is often stored on a service provider's server, user IDs and passwords are commonly utilized for identification and authentication purposes, relying solely on these credentials may lead to security vulnerabilities. Rather than depending on a central authority to facilitate transactions, this system enables users to engage in direct transactions with one another. In a decentralized application, the user may be required to pay a fee in cryptocurrency to the developer in order to download and use the program's source code. [6]. Using smart contract, users can conduct transactions without disclosing any private information.

A cryptocurrency is a sort of digital money that functions as a decentralised means of exchange across a computer network. As opposed to conventional money, it is neither maintained or regulated by any central body, such as a government or bank. Instead, it utilizes cryptography to secure and verify transactions, and a network of nodes collectively maintain the integrity and security of the cryptocurrency system [7].

Unlike actual money, which is a tangible object, cryptocurrencies are not issued by a single centralised authority. In contrast to central bank digital currencies (CBDCs), they rely on decentralised control systems [2]. The creation of a cryptocurrency by a single issuer before its issuance or minting is commonly viewed as a centralized approach [7]. Each cryptocurrency operates using distributed ledger technology, often a blockchain, which acts as a public record of financial transactions when it is used with decentralized control. Macroeconomic variables, as well as conventional asset classes like stocks, commodities, and currencies, only exhibit modest exposures to the returns from cryptocurrencies.

The NFT stands for non-fungible tokens. NFTs are digital assets that encompass a broad range of items, such as art, music, in-game items, videos, and more. NFTs have been around since 2014, but they have only just begun to acquire popularity as a means of buying and selling digital art. They are regularly bought and sold using cryptocurrencies, which are typically coded using the same basic software as numerous cryptocurrencies. NFTs have been around since 2014, but they have only just begun to acquire popularity as a means of buying and selling digital art. The NFT industry alone was estimated to be worth a stunning \$41 billion in 2021, which is almost equal to the value of the entire global fine art market.

Similar to Crypto Trading, Non-Fungible Token (NFT) Trading is also gaining popularity for its uniqueness and antiquity. In May 2014, Kevin McCoy and Anil Dash were credited with creating Quantum, which is considered to be the first documented "NFT". Any type of digital asset, whether it's an image or a 3D Light Detection and Ranging (LiDAR) scan, has the potential to be classified as an NFT. One of the features of creating a NFT of any digital asset is that it is stored in a secured blockchain network and hence cannot be modified and tampered whilst ensuring privacy and safety. These digital assets cannot be stolen by anyone and hence prevents illegal copyright infringement acts [6]. Our project aims at introducing and providing an easy entry point as a new way of investing and holding NFTs as valuable assets.

## II. RELATED WORK

Comparing with the ongoing famous NFT marketplace called OpenSea, that offers users the ability to buy, sell, mint and trade NFTs. It is the largest NFT trading platform.

The first and biggest NFT platform, OpenSea, offers crucial NFT services. The ability for customers to quickly

trade various NFTs did not exist prior to its creation in 2017. Users can now exchange other NFTs and crypto collectibles with one another thanks to OpenSea. To explore NFTs or establish a new crypto wallet these two prompts appear when you first launch the desktop and mobile dashboards. Alternatively, you can link your existing cryptocurrency wallet to the platform. You can both browse the enormous selection of the more than 2 million NFT collections and start your own.

OpenSea is built upon the Wyvern Protocol, which is an open-source protocol that facilitates peer-to-peer exchange of virtual assets. The protocol provides the foundation for OpenSea's operations by acting as a collection of smart contracts on the Ethereum blockchain.

The goal of OpenSea is to improve transaction capabilities by streamlining, speeding up, and utilizing more compatible blockchain platforms. Alongside Ethereum's ERC-721 and ERC-1155 standards, OpenSea has incorporated protocols that are specific to other blockchains like Solana, Polygon, and Klaytn, allowing for greater flexibility in transacting.

On contrary with Opensea in Genft application the users can generate their own NFT with our unique NFT generator, we also cater an NFT hosting platform which means we are complete package for generating, minting, and hosting of the NFTs. Unlike OpenSea, being just a hosting platform. Each NFT generated by our generator is unique or in other words visually different from each other as the generator has number of combinations and variations for users to choose from and to trade it on our platform itself.

## III. PROPOSED SYSTEM

### A. Tools used

Software – The software used for Genft application are, for front end we have used, React (also known as React.js or ReactJS), which is an open-source, free front-end JavaScript library for developing user interfaces.

ReactJS runs on Node.js, which is an open-source, cross-platform back-end JavaScript runtime environment. This JavaScript runtime environment runs on a JavaScript Engine (also known as the V8 engine) for executing JavaScript code outside of a web browser. It was designed to help creating scalable network applications. By leveraging Node.js, programmers can also develop command-line tools and server-side scripts which constructs dynamic web page content all before delivering the page to the user's web browser.

The Ethereum blockchain can be interacted with using the software wallet MetaMask (developed by ConsenSys Software Inc) It can be found in the form of a mobile application or a browser extension giving users the access to their Ethereum wallet, while enabling them to connect with decentralized applications.

For backend, Solidity is used. Solidity is an object oriented programming language which is used for creating smart

contracts on many blockchain systems like Ethereum. It was created by numerous former contributors to the Ethereum core as well as Christian Reitwiessner and Alex Beregszaszi. Solidity programs are executed via the Ethereum Virtual Machine. Ethereum, as well as other private blockchains like the business-focused Hyperledger Fabric blockchain, use Solidity as their main language. A proof of concept utilizing Solidity running on Hyperledger Fabric was deployed by SWIFT.

Web3.storage is a suite of APIs and services that make it easy for developers and other users to interact with data in a way that is not tied to where the data is physically stored. It natively uses decentralized data and identity protocols like IPFS, Filecoin, and UCAN that enable verifiable, data- and user-centric application architectures and workflows. The best of web2 and web3 to provide infra you can rely on to scale with you [3].

Finally, regarding the deployment of contracts, A collection of interfaces, contracts, and utilities called OpenZeppelin ERC-721 is built on ERC-721. Non-fungible tokens, commonly referred to as deeds, have a standard interface known as ERC-721. The implementation of a standardized NFT API within smart contracts is made possible by this standard. The tracking and transferring of NFTs is made simple by this standard.

Truffle Suite is a top-notch programming environment for testing frameworks, and asset pipeline. It was created to make it easier for developers to work on blockchains that are powered by the Ethereum Virtual Machine. (EVM). Using Truffle, the user has access to the built-in smart contract compiler, smart contract deployer, etc.

Ganache is a software tool that offers a virtual environment for testing Ethereum Blockchain based projects. Using Ganache, one can run tests and issue commands, thereby maintaining a complete control over the blockchain.

B. Model

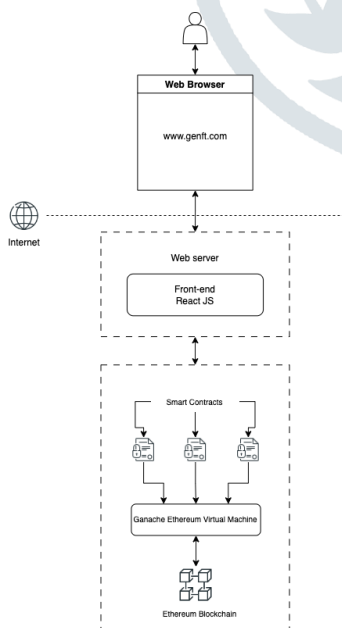


Fig. 1. Block Diagram

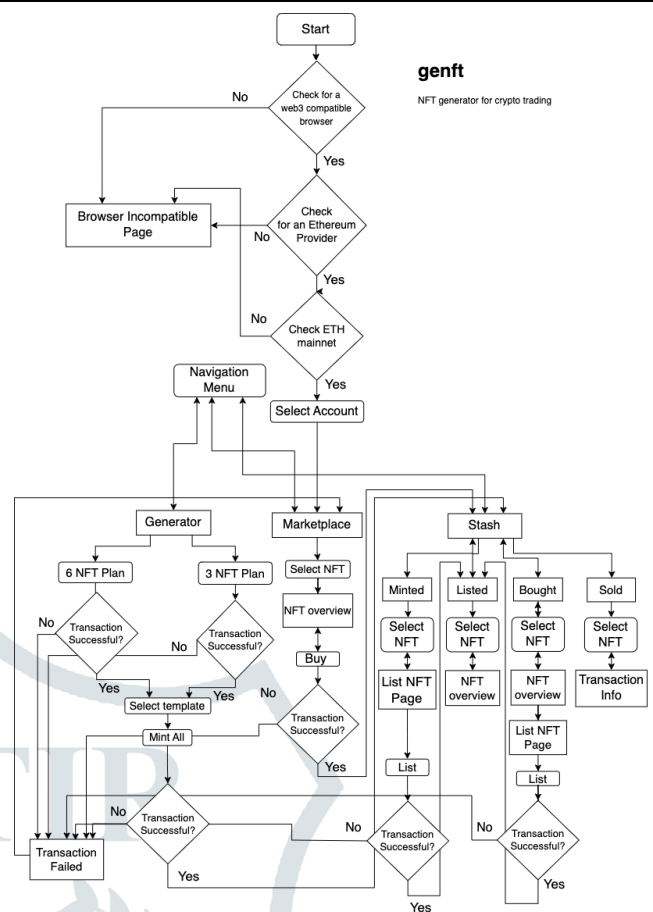


Fig. 2. Flow Diagram

When the user enters “www.genft.com” on the address bar of their web browser, the website first checks for web3 compatibility. Next, the site will check for an Ethereum provider which enables a seamless transaction in crypto currencies, which is vital for our website. We are showcasing MetaMask, a crypto-currency wallet with rich APIs for an easy integration with websites.

Confirming that the user has successfully logged in to their account and have approved to connect to the Ethereum Main net, the genft is now ready to use and the user is ready to proceed with the website.

On the homepage, the user can see multiple NFTs which are already listed on the genft marketplace. By clicking on one of the NFTs, the user will be able to see its name, description, and the price (exclusive of gas fees) and a buy button. By clicking on the buy button, a pop-up from Ethereum provider (MetaMask in this case) will appear seeking approval for the transaction. If the user faces technical difficulties or inadequate balance, the transaction will fail and the user will be redirected to the transaction failed page.

Next, if the user chooses to generate unique NFTs on their own, the user can click on the “NFT Generator” button from the Navigation menu.

After selecting a template, the user is presented with unique NFTs based on the chosen template. A Mint All button, when clicked, mints all the generated NFTs. After a successful

transaction, the user can choose to check out their minted NFTs from the “Minted” section of “Stash” page. If the user faces technical difficulties or inadequate balance, the transaction will fail and the user will be redirected to the transaction failed page. In the Bought section of Stash page, the NFTs bought by the user from the marketplace will be displayed in a grid.

The Sold section of Stash page will show all the sold NFTs which were previously listed by the user on the marketplace. The page will show a timestamp overlay on the sold NFT. By selecting a NFT, the user will be able to see the transaction information.



Fig. 5. Minted section of Stash page.

The Minted section of the Stash page shows all NFTs minted by the user from the Generator. For Listing a NFT, the user must provide a name and a description.

#### IV. RESULTS & DISCUSSION

##### A. Result

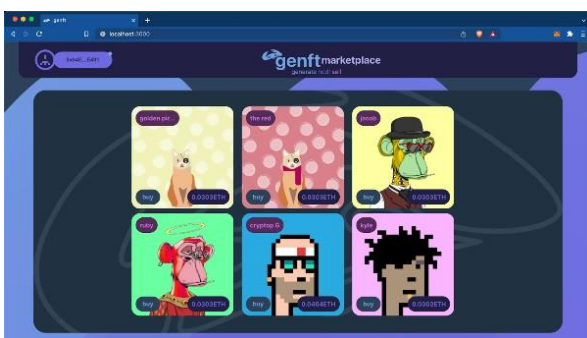


Fig. 3. Homepage.

The homepage of the genft marketplace consists of a navigation bar and a grid of multiple NFTs. On the homepage, listed NFTs will be shown. These listed NFTs can be bought from the marketplace.



Fig. 6. Listed section of Stash page.

The Listed section of the Stash page shows all the NFTs listed by the user on the marketplace.

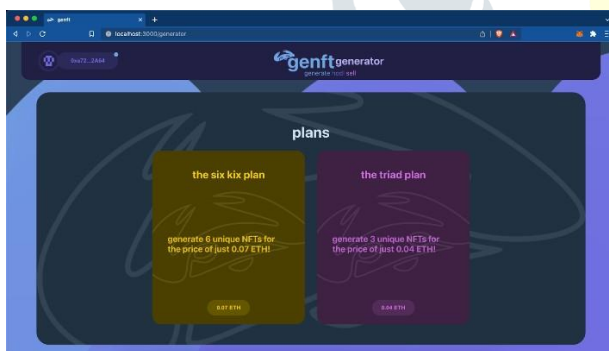


Fig. 4. Generator page

The purpose of Generator is to generate NFTs based on pre-loaded templates like Bored Ape, Cryptopunk and Feline Better. The user can choose a plan among two existing plans: Six Kix Plan and Triad Plan. The “Six-kix plan” generates 6 unique NFTs whereas the “Triad plan” generates 3 unique NFTs for 0.07 ETH and 0.04 ETH respectively. The user has the independence of choosing a template of their choice.

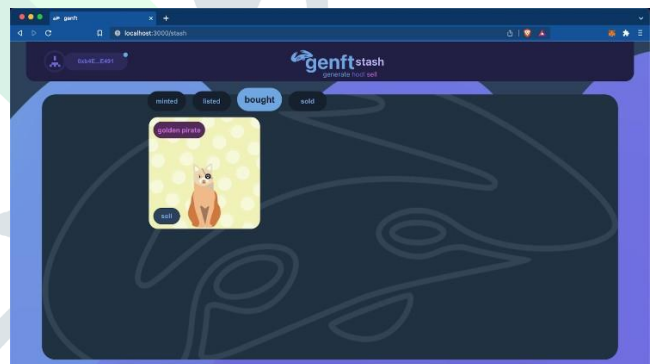


Fig. 7. Bought section of Stash page.

The Bought section of the Stash page shows the NFTs bought by the user from the marketplace. The user can also re-sell these NFTs.

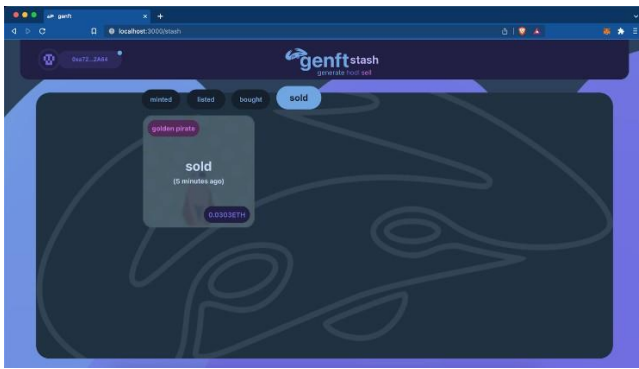


Fig. 8. Sold section of Stash page.

The Sold section of the Stash page shows all the sold NFTs which were previously listed by the user on the marketplace.

### B. Discussion

Every web application these days is based on a centralized server. These centralized servers are owned by Big Data companies like Google, Amazon, Meta, Microsoft and even Apple. These Big Data players are renowned for stealing heaps of personal data. Hence, we need to rely on decentralized, anonymous service providers like the Blockchain technology. The apps/ websites based on Blockchain are called decentralized apps or Dapps. This website is an example of Dapps which lets the user invest into NFTs for trading in cryptocurrency anonymously, without any interference from governing agencies. This website also lets the user generate their unique artwork from preloaded templates like Bored Ape, Cryptopunk and our original design: Feline Better while maintaining privacy. Each generated NFT is unique in appearance and also has a unique metadata. This website uses IPFS Storage to store data in a decentralized manner to make it even more secure. The only disadvantage of blockchain is that it is immutable (it can not be changed) and every write on this universal ledger costs a certain amount of gas fees. With wider usage of Dapps, the gas fees will decrease eventually. Due to gas fees, simple applications like e-commerce or social media, a blockchain based backend is not feasible. The only logical use of blockchain is in decentralized finance applications or de-fi applications. The upcoming metaverse era will therefore rely the most on NFTs for allocating unique resources to its users.

## V. CONCLUSIONS

There is a need for decentralized applications which do not rely on big data companies. Our application is one of the decentralized applications which lets users generate unique and rich NFTs from preloaded templates. This website can generate thousands of unique NFTs from a single template. These can be traded for ETH on our proprietary marketplace called the genft marketplace.

1. Loans with NFTs: Since NFTs are digital assets, investors can borrow money by using them as collateral.
2. NFTs in Gaming: Players can create game content and sell it on different gaming platforms by using

digital assets like NFTs. NFTs are a crucial part of blockchain gaming.

3. NFTs in Music: NFT music is an emerging new fashion. Musicians and content producers can hold their tracks as NFTs, which are digital assets.
4. NFTs for the Metaverse: NFTs are a type of virtual property in the metaverse. These NFTs help construct land and structures in the metaverse and act as a contract of ownership. You must mint an NFT for the land in order to purchase, trade, or build on it in the metaverse.

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