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A Review Paper on Non–Fungible Tokens (NFT)

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Abstract: *Non-fungible tokens (NFTs) are a new sort of blockchain-based token that is unique and indivisible. They were first introduced in late 2017. While fungible tokens have opened up new use cases such as Initial Coin Offerings, the value of NFTs as a component is still unknown. This research fills in the theoretical and practical knowledge gaps by demonstrating the efficacy of NFTs in the event ticketing area. We design, create, and comprehensively evaluate a prototype of an event ticketing system based on NFTs using a rigorous design science research approach. As a result, we show how NFTs may be used to tokenize digital products, reduce fraud, and strengthen control over secondary market transactions. We also provide generalizable information of the benefits and challenges of NFTs, as well as consequences for both researchers and practitioners.*

Keywords: Non-fungible tokens

I. INTRODUCTION

In 2021, the non-fungible token (NFT) market is expected to grow significantly. The NFT market went from total daily sales of around USD 183,121 in 2020 to an average of USD 38 million in 2021 in just one year. The artist Beeple sold a piece of digital art for USD 69 million, while Twitter CEO Jack Dorsey sold the first Tweet for USD 2.9 million, both of which are NFT examples. CryptoPunks and Decentraland are two other well-known NFTs. After Facebook announced it was changing its name to Meta, a metaverse platform where users can buy and sell virtual properties, the stock jumped 400 percent and reached an all-time high market capitalization of more than USD six billion.

NFTs are digital assets such as artworks, records, virtual real estate, and pets that can be represented by tokens kept on a blockchain. Specialized marketplaces such as OpenSea, Axie Marketplace, and Rarible sell NFTs. Investors can also trade the property right to the asset underlying the NFT on these platforms. NFTs can also be set up so that the original artist receives a percentage of all subsequent sales because they use smart contract technology. The primary distinction between NFTs and cryptocurrencies like bitcoin is that cryptocurrencies are fungible, or interchangeable; they all have the same value. NFTs, on the other hand, are non-fungible, which means that each one is unique and cannot be swapped for another.

II. WHAT IS AN NFT?

An NFT is a type of digital asset that represents real-world aspects like art, music, video, and in-game content. They're bought and sold online, and they're usually encoded with the same underlying software as many other cryptos.
Despite the fact that they've been there since 2014, NFTs are growing popularity as a tool to buy and sell digital art. NFTs have cost a whooping $174 million since November 2017.

NFTs are usually one-of-a-kind, or at the very least one of a very small batch, and contain unique identifying codes. "In essence, NFTs create digital scarcity," says Arry Yu, managing director of Yellow Umbrella Ventures and head of the Cascadia Blockchain Council of the Washington Technology Industry Association. This is in stark contrast to the great majority of digital products, which are almost always available in virtually unlimited quantities. If a certain asset is in demand, cutting down the supply should theoretically increase its value. Many NFTs, on the other hand, have been digital works that already exist in some form elsewhere, such as iconic NBA video clips or securitized copies of digital art that are already circulating on Instagram, at least in these early days. "EVERYDAYS: The First Day," for example, was made by famed digital artist Mike Winkelmann, better known as "Beeple." which was most famous NFT at that moment.

Individual images and even the entire collage of imagescan be accessed on the internet for free.So, why are people willing to pay millions of dollars on something that might be screens hotted or downloaded easily?

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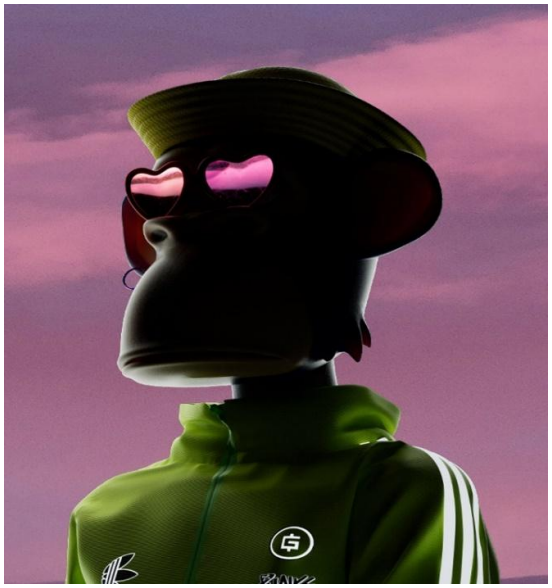
Non-financial transactions will allow the user to keep the original object. To decide the ownership, it has its own built-in authentication.To collectors the digital bragging rights are very importantas an item.



III. How is NFT is different from other Cryptocurrencies?

The term "non-fungible token" means the token that is not fungible. It's usually programmed in the same way as cryptocurrencies like Bitcoin or Ethereum, but that's where the similarities end.

Cryptocurrency and digital money are not non-fungible tokens because they can be traded or exchanged. The digital currencies and bitcoins are worth the same because their values remain same.Hence the is becomes secure to execute the blockchains transactions due the fungibility of cryptocurrencies.

NFT's are not similar to other materials. Each contains a digital signature that prevents NFTs from being substituted for or compared to one another (hence, non-fungible). Simply because they're both NFTs, one NBA Top Shot clip isn't the same as EVERYDAYS.

The main distinction between the three is that, unlike cryptocurrencies and digital money, NFTs are one-of-a-kind representations of real-world assets that cannot be traded for one another. Cryptocurrencies and digital currencies can be exchanged for each other without losing value.

Digital currencies are centralised and regulated by institutions such as banks and governments, which maintain track of all transactions. Cryptocurrency and NFTs are decentralised and governed by their respective communities.

IV. How do NFT's Work?

A decentralized public ledger is used to keep track of all the NFT transactions where all the NFT's are stored. Most people are familiar with blockchain as the underlying technology that allows cryptocurrencies to exist.

NFT's can be held any of the blockchains but most commonly the are held in the Ethereum blockchain.

An NFT is made up of digital objects that represent both tangible and intangible objects, such as:

1. Works of art
2. Animated GIFs
3. Highlights from sports and videos
4. Antiques and collectibles
5. Video game skins and virtual avatars
6. Sneakers by a designer
7. Instrumental music

Item from the Real World:

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1. Deeds to a vehicle
2. Tickets to a live event in the real world
3. Invoices that have been tokenized
4. Documents of legal significance
5. Signatures

There are a variety of new possibilities to explore!

At any given time, an NFT can only have one owner. The uniquid and metadata that no other token can replicate are used to manage ownership. Smart contracts that assign ownership and govern the transferability of NFTs are used to create them. When someone generates or mints an NFT, they are executing code from smart contracts that follow various standards, such as ERC-721. This data is stored on the blockchain, which is where the NFT is handled. From a high level, the minting process includes the following steps:

1. Adding a new block to the game
2. Information verification
3. Incorporating data onto the blockchain

NFTs have a few unique characteristics:

Each token has a distinct identification that is tied to a single Ethereum address.They are not replaceable 1:1 with other tokens. One ETH, for example, is identical to another ETH. With NFTs, this isn't the case.

Each token has a unique owner, whose identity can be easily verified.They are based on Ethereum and may be purchased and traded on any Ethereum-based NFT exchange. To put it another way, if you own an NFT:

1. It's simple to show that you own it.
2. Demonstrating that you hold an NFT is equivalent to demonstrating that you have ETH in your account.
3. Even tweets are taken into account. Jack Dorsey, a co-founder of Twitter, sold his first tweet as an NFT for more over $2.9 million.
4. NFTs are essentially digital versions of tangible collector's artefacts. As a result, rather than receiving an actual oil painting to put on the wall, the customer receives a digital file.

The public key of the originator is inextricably linked to the history of the token. The public key of the creator can be used to prove that the token you own was generated by a specific person, increasing its market value (vs a counterfeit).

Signing messages to establish ownership of the private key behind the address is another approach to prove ownership of the NFT.

Your private key serves as proof of ownership of the original, as indicated previously. This means that the NFT is under the control of the private keys associated with that address.

A signed message can be used to prove that you own your private keys without disclosing them to others, proving that you also own the NFT!

No one has the ability to manipulate it.

You can sell it, which may result in resale royalties being paid to the original creator.You can keep it indefinitely, safe in the knowledge that your Ethereum wallet will protect your asset.

If you make an NFT, you can do the following:

1. You'll have no trouble proving your authorship.
2. The scarcity is decided by you.
3. Every time it is sold, you can get royalties.
4. It can be sold on any NFT or peer-to-peer exchange. You're not tied to any platform, and you're not reliant on anyone to act as an intermediary.

V. SCARCITY

The inventor of an NFT has complete control over the asset's scarcity.

Consider a sporting event ticket, for example. The author of an NFT, like an event organiser, can pick how many tickets to sell. 5000 General Admission tickets, for example, are often perfect reproductions. Occasionally, a ticket with an allocated seat will be issued in multiples that are extremely similar but somewhat different. In another scenario, the developer might seek to make a one-of-a-kind NFT as a collector's item.

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Each NFT would still have a unique identity (similar to a bar code on a typical "ticket") and only one owner in these situations. The author has complete control over the NFT's intended scarcity. A creator may plan to make each NFT fully unique in order to establish scarcity, or they may have compelling reasons to build thousands of copies. Keep in mind that all of this data is accessible to the general public.

VI. ROYALTIES

When some NFTs are sold, their inventors will receive royalties automatically. Although this is a new notion, it is one of the most potent. Every time the NFT is sold on, the original owners of EulerBeats Originals get an 8% royalty. Furthermore, several platforms, such as Foundation and Zora, encourage its artists to earn royalties.

This is totally automated, so creators can simply sit back and collect royalties as their work is passed around from one person to the next. Currently, calculating royalties is exceedingly laborious and inaccurate, which means that many creators are underpaid. You'll never miss out on a royalty if your NFT is programmed with one.

VII. WHAT ARE NFT'S USED FOR?

This is totally automated, so creators can simply sit back and collect royalties as their work is passed around from one person to the next. Currently, calculating royalties is exceedingly laborious and inaccurate, which means that many creators are underpaid. You'll never miss out on a royalty if your NFT is programmed with one.

Making money using NFTs isn't limited to art. To raise money for charity, companies like Charmin and Taco Bell have auctioned off themed NFT art. Taco Bell's NFT art sold out in minutes, with the highest bids coming in at 1.5 wrapped ether (WETH)—equal to $3,723.83 at the time of writing. Charmin's offering was dubbed "NFTP" (non-fungible toilet paper), and Taco Bell's NFT art sold out in minutes, with the highest bids coming in at 1.5 wrapped ether (WETH)—equal to $3,723.83 at the time of writing.

In February, Nyan Cat, a 2011 GIF depicting a cat with a pop-tart body, sold for nearly $600,000. As of late March, NBA Top Shot had grossed more than $500 million in sales. NFT sold for more than $200,000 for a single LeBron James highlight. Most information on some of the more well-developed use-cases and ambitions for NFTs on Ethereum may be found here.

1. Digital content
2. Gaming items
3. Domain names are unique identifiers
4. Items that are physically present
5. Collateral and investments

7.1 Increasing Creators' Earnings

The most common application of NFTs today is in the field of digital material. The platform undermines the revenue and monetization potential of content creators. An artist posting work on a social media site generates revenue for the platform, which sells advertising to fans of the artist. In return, they get exposure, but exposure doesn't pay the bills. NFT is driving a new creative economy in which creators keep control of their work instead of handing it over to the platforms that promote it. Ownership is ingrained in the substance.

7.2 Pros of Non-fungible Tokens

Advantages of NFTs

Both artists and business owners can benefit from the NFT.

Artists have a new source of income.

- NFTs were designed in part to assist artists make more money in a digital landscape that hasn't always been fair to them. The artist earns more money if their work rises in value, which it does when it becomes popular on the internet.

Immutability

- If the authenticity of NFTs is certified on the blockchain, they cannot be modified or substituted in any way. Authenticity's intrinsic value acquires an actual, extrinsic value as well.

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Smart Contracts

- Smart contracts, which are at the heart of blockchain technology, allow for automatic executions in response to particular conditions. If the NFT owner then resells it for a profit and the artist included a royalty "rider" in the contract, the artist will be reimbursed instantly.

Ownership pride and support for the arts

- NFTs provide philanthropic donors with a direct way to support the arts while also adding a one-of-a-kind item to their collection.

Cons of Non-fungible tokens

NFTs are quite popular, yet the field is still developing. The following are some potential pitfalls:

Market that is entirely speculative

- At the moment, the value of an NFT is solely determined by its aesthetic and sentimental value. It's impossible to know how much it's worth as a long-term investment, so it's just guesswork right now.

NFTs Have the Potential to Be Stolen

- Hackers who don't believe NFTs are "genuine" investments have targeted them in the past. Old and ineffective security measure are used for the exchange of the NFT tokens.

The Future of Sustainability is in Question

- Creating and selling NFTs, as well as blockchain transactions, consume a lot of energy. There also comes the concerns of the environment due to rapidly growing market of NFT's.

Control does not imply ownership.

- Ownership of a unique NFT does now no longer mean possession over its distribution or duplication throughout platforms. Ownership simply manner they have got the "unique" – they haven't any energy to prevent "prints" from being made.
- So, how do you suspect the NFT marketplace will fare withinside the coming years? Only time will tell if this is true.

VIII. CONCLUSION

Non-fungible tokens are one-of-a-kind bits of data recorded on a blockchain. Digital art, music, video clips, and tickets are just a handful of the digital goods being transformed into NFTs. Some believe that this is a bursting bubble, while others believe that NFTs will drive the digital economy. Because the technology is still in its early phases, we must wait and see how it develops.It's vital to remember that the NFT field is still in its early stages. As a result, new platforms are expected to supplant the present crop of top NFT projects in 2021.Currently, the word NFT is progressively evolving away from thoughts of gaming and CryptoKitties and toward various use cases such as art, DeFi, ticketing, digital identification, and others.In fact, its application possibilities are only limited by the developers' and cryptocurrency community's imaginations.

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