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Decentralized App for music Streaming

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Abstract: ***Music has always been a way for artists to express themselves. The music industry has grown exponentially in the last few years with the emergence of digital music streaming platforms. However, streaming platforms for streaming music are centralized, so artists only receive a small part of the revenue and still have no control. Respect their content. Cases of plagiarism are on the rise in the music industry, so there is a need to use technology that can help artists. Currently, there is a need for technological change that will give artists control and transparency over their content. According to the current system, artists are registered with record labels, streaming platforms, etc. must rely on many intermediaries such as to eliminate this problem, our article focuses on blockchain decision-making approach where artists and users can interact directly to upload, buy songs, and pay Royalties. Artists can submit their music to the DApp to ensure ownership and avoid the impact of piracy. Users can buy and stream music from independent artists or support artists with purchases and donations using Ethereum.***
Keywords: Blockchain, Ethereum, Decentralized app, Music streaming

I. INTRODUCTION

Blockchain is a revolutionary technology that stores information about transactions and guarantees security, transparency and distribution. It is like data stored in immutable blocks, where authority is decentralized rather than centralized. Shipping, trade etc. It has many areas of use. Blockchain technology is widely used in the banking and finance industry as it ensures the security of storing permanent records of millions of transactions and information. Decentralization.

Music is a vast industry that includes not only artists but also songwriters, record labels, retailers, show managers and staff. In 2019, the total revenue of the music industry reached 21.5 billion US dollars. Streaming accounted for 56% of that figure, generating $11.9 billion in global revenue. It is exceedingly difficult to hold people accountable when there is so much streaming; Another thing that caused the sudden collapse is music piracy. [5]

With digitalization and the introduction of many music streaming platforms, the music industry has grown. But major music streaming platforms are important, so artists have no control over their content and only receive a small part of the revenue from platform #2. The current system requires artists to rely on intermediaries such as studio labels, record labels, and streaming services to manage and market their work. This can be solved by direct interaction between clients and artists as this will eliminate the need for intermediaries in revenue. To overcome these issues, the application needs to build a DApp using React Framework, private blockchain - Ganache, truffle and Web3.js libraries.

II. LITERATURE REVIEW

In [1], it is said that the adoption of blockchain in the music industry supply chain is planned from the perspective of a semantic-driven framework for the automatic generation of flexible smart contracts based on the agreement of all parties.

It also examines how the solicitation process can be used in the music industry from the perspective of independent online artists. The use of DApp technology has been reviewed in [2] to ensure customers are not blind to developers and to check whether the products are truly so. Manufacturers can use the system to provide product information without directly managing the store, ultimately reducing costs.

In [3] Chavan, Sudarshan, et al. As an Ethereum-based music streaming service (with IPFS as the backend), try removing third parties and connecting artists and listeners directly from. In this way, they overcome the current lack of transparency in the broadcast industry, reducing payments to actors and simplifying the payment process for people. In the future, they suggest incorporating dynamic pricing models and making an agreement to approve tracks to be uploaded to the platform.

The impact of blockchain technology on the music industry was analyzed in [4] by analyzing the opinions of academic experts. They say income distribution to players is an ongoing problem. According to them, some business experts believe that this problem can be solved with blockchain technology, but some experts do not believe it. The author believes that blockchain technology (using smart contracts) can quickly make payments and generate additional income.

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III. PROBLEM

The goal is to create a solid foundation for those who work hard and are talented but don't get the opportunity to shine; When everyone works hard they can get the recognition and property they deserve. regardless of their fame or how popular they are. "Create a blockchain-based model to solve music copyright without transparency issues and create a collaboration system to generate revenue from the private income of model artists."

Problems in the current system

1. No copyright: Rights in music; includes copyrights, performance rights and distribution rights. While all of this is controlled by the recording file and the system, the real artists have no rights to the content.
2. Slow and unfair payments: Most royalties, distribution, advertising and distribution fees are withheld from labels and producers, adding up to a fraction of the cost paid to the artist. Also, mainstream record labels help independent artists because they do not have equal power when negotiating licenses and terms.
3. No hidden information: Song statistics, payments are full of records, they are busy managing information with interviewers and people compromise with different payment methods and information which can further arise multiple security and privacy issues.

IV. TECHNOLOGY

A. *Blockchain*

1) *DApp:* Decentralized application that uses decentralized systems to work differently. DApp helps users interact with smart contracts stored on the blockchain.
2) *Robustness:* Used to write advanced messages that can be stored in smart contracts that can be stored on the blockchain. This will describe the logic behind our blockchain and show the behavior of each account.
3) *Ganache:* Used to create a native Ethereum blockchain and its virtual currency can be used in a DAPP by putting it in a cryptocurrency wallet. This helps us run our DAPP as it connects to the real Ethereum Internet without long-term transactions.
4) *MetaMask:* It is an encrypted wallet that can extend access through the browser. We can use it to interact with native blockchains built using Ganache.
5) *Truffle:* Will be used as a development environment for creating smart contracts and DApps. It can be used to collect, test and distribute smart contracts.

B. *Frontend*

1) *React:* It is an open-source JavaScript library for front-end development. We use it because it's easy, fast and has a lot of support on the map and forums. We are using react for user interface with following inegrations:
2) *Web3.js:* It is a collection of libraries to help our web applications communicate with the Ethereum blockchain using JSON-based calls.
3) *IPFS (Interplanetary File System):* A storage system that uses peer-to-peer (P2P) networks. Unlike traditional "space-based" storage systems, IPFS is "content-based" in that it maintains a unique global hash value for all files. This gives it many advantages, such as independence from a single control center and protection of parallel data, making it ideal for using our DApp.

V. SYSTEM REQUIREMENTS

Software	*Function*	*Version*
Web3.js	Connect with Ethereum	1.7.0
IPFS	Store Files	0.12.0
Ganache	Ethereum Blockchain Server	7.0.2
MetaMask	Ethereum Wallet	10.9.3
Truffle	Development of ETH	5.5.2
Node	JavaScript Runtime	16.14.0
React.js	User Interface	17.0.2
Visual Studio	Integrated Developer Environment	1.63.2
Windows 11	Operating System	21h2

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VI. PROPOSED SYSTEM

Our proposed system includes registration of artists and audience to our DApp. The artists can upload songs, assign fees for the song or to keep it free for adding to audience playlist, track and analyze performance of their songs. The audience can pay the fee for the song they want to add in their playlist and also donate to the artist they like. The songs uploaded by the artists will be stored on IPFS that is a distributed database. After checking for duplicates a unique hash value will be generated for the song. If the same song is in the library, it will not be loaded. Viewers can pay in nano payments using the MetaMask wallet with Ethereum.

A. Two User Groups

1) Artists

a) The audience can stream songs and follow their activities.

b) The cost of listening to music after using free play time can be split.

c) There is also the option of making the song available to everyone for free.

2) Audience

a) Browse artists and songs.

b) Music can be accessed by paying the fee determined by the artist

c) Smart Contract: A smart contract is a transfer protocol created to determine, maintain or close according to the terms of the contract or accept the terms and actions of the Law. The purpose of smart contracts is to eliminate the need for trusted intermediaries, decision making and cost control, reduce fraud and reduce evil and not worry about fashion.

B. Transactions

1) Music Purchase: Visitors can pay via Ethereum and purchase music at the price set by the artist.

2) Donation: Visitors can donate to the artist.

VII. SYSTEM ARCHITECTURE

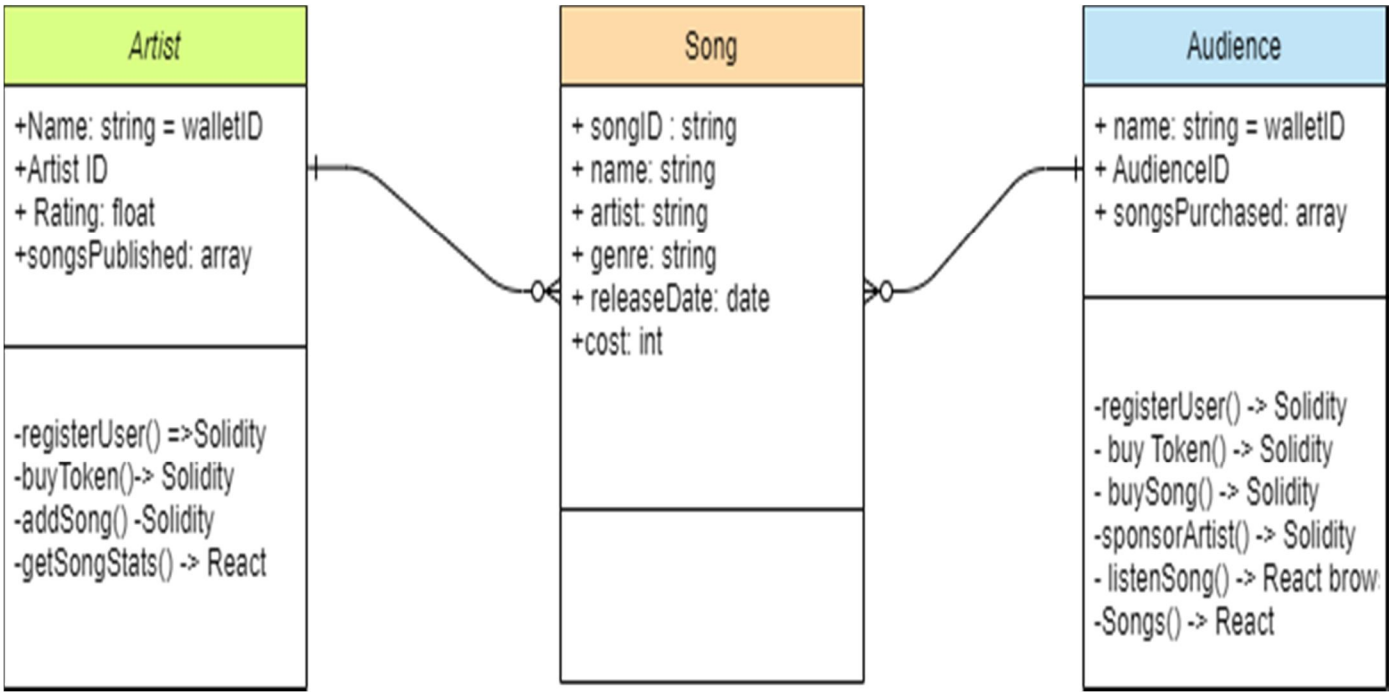

Fig 1: Entity relation

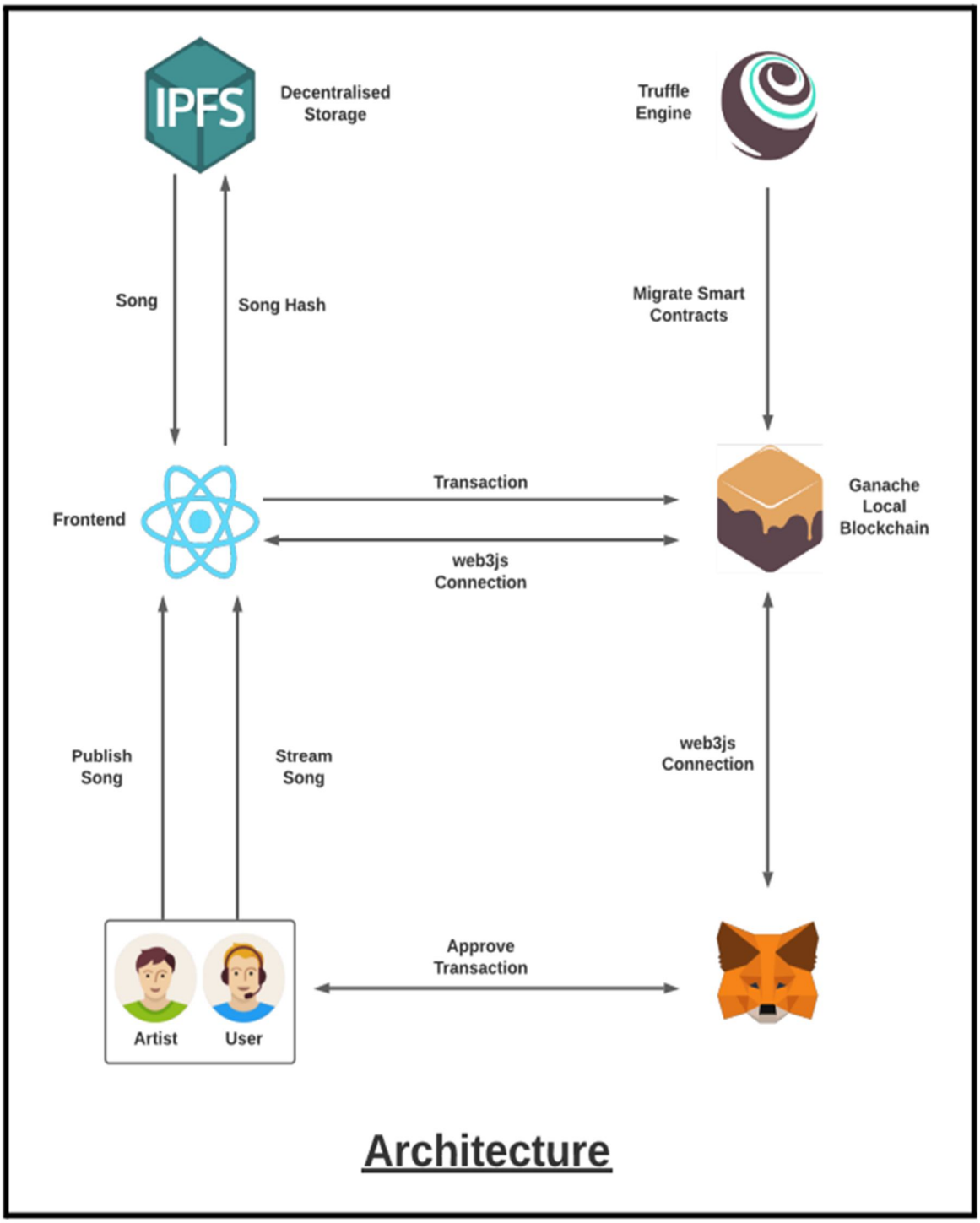

Fig 2: Architecture

A. Features

P2P storage system: All files will be stored in file sharing (such as IPFS) and songs will be tried to be played.
Cryptocurrency: All payments are made via nano payments using the Meta Musk wallet. Wallets can be filled with ETH funds.
Crowdfunding: Support your favorite artists by financing their albums and tracks.
Survey System: Popular music will be created for various artists using the platform.

B. Use Case Diagram

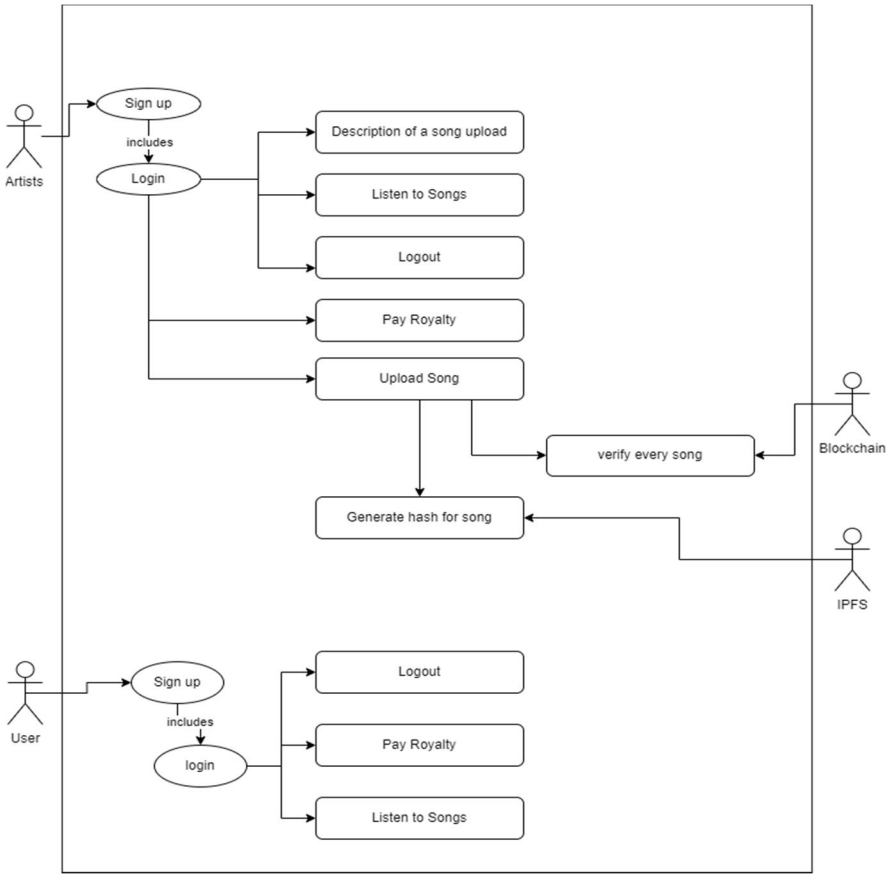

Fig 3: use case diagram

VIII. CONCLUSION

In summary, this article aims to create a decentralized application that will be useful for artists to publish their music and get the copyright properties and recognition they need. Our project will also form the basis for further development. Since blockchain is still in development, it can be used to create immutable data and information. In the future, mixer audio fingerprinting, machine learning and artificial intelligence may be combined. Functions such as live streaming, playlists and music recommendations can be added. The system proposed by then was designed to provide comfort and functionality.

IX. ACKNOWLEDGEMENT

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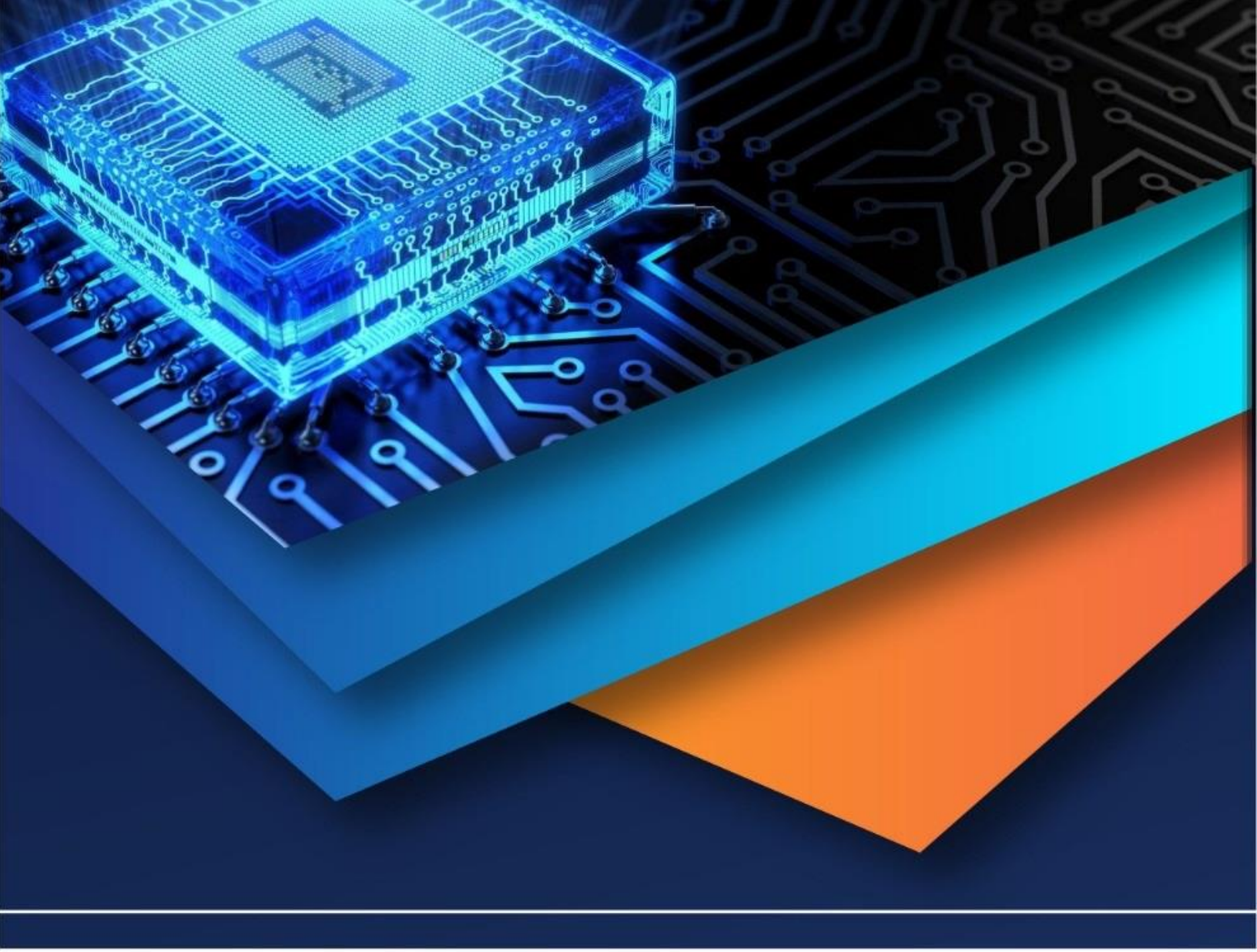

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