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Blockchain, AI & Web3.0 in Metaverse of Madness

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***Abstract:** As our world moves forward we have gone from reading books and papers to scrolling through endless instagram feeds. And the metaverse is exactly what the next-gen social media would look like. Anything that we do in the real world e.g. Hanging out with friends, visiting the art gallery, watching a soccer game can now be done in a living, shared, everlasting virtual world. The impact of artificial intelligence and blockchain technology on the metaverse is discussed in this research paper.*
***Keywords:** Blockchain, Web 3.0, AI, AR, VR.*

I. INTRODUCTION

The name "metaverse" is made up of two words: the Greek term Meta and the English word "universe." Meta is a word for which we must credit the ancient Greeks, among others. Meta signified "beyond" or "beyond" to them. The concept of the metaverse was first introduced in Neal Stephenson's science-fiction novel Snow Crash. However, the concept of a metaverse, which was formerly thought to be fiction, now appears to be a possibility in the future. Users will be able to collaborate, meet, play games, and socialize in these 3D environments thanks to the metaverse. The metaverse is dominated by augmented reality, with each user controlling a customized version of themselves in this virtual world known as an avatar. For example, you could hold a mixed reality meeting in your virtual office using an Oculus VR headset, finish your work, and then unwind in a blockchain- based game or concert. Though the metaverse isn't fully realized yet, games like Roblox, Fortnite, and Gather.town bring various aspects of our daily lives into the digital realm.

A. Why does the Metaverse matter so much?

Why would people create so much fuss about a video game like reality ? One big factor to fuel this thinking might be the pandemic we just witnessed. The pandemic forced us to unlearn and relearn how to live, it made us find alternate if not new ways forms of real-time interaction.

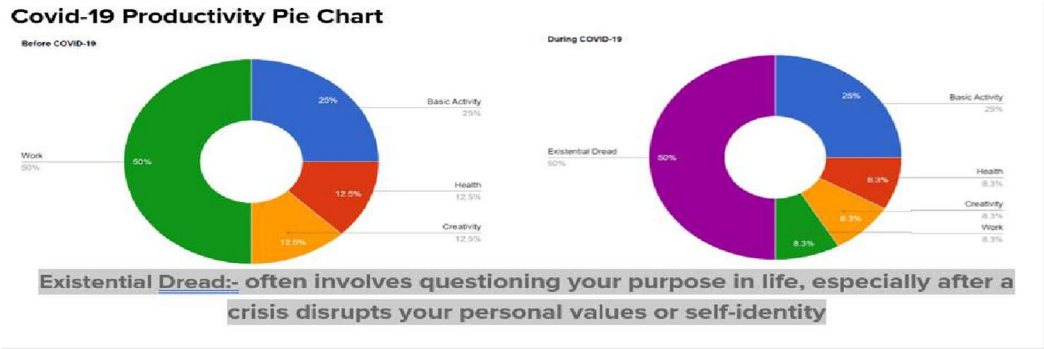


Fig.1: Covid-19 Productivity Pie Chart
Data Source:- https://goodticklebrain.com

Metaverse answers the biggest question raised post-pandemic. One might ask what that is ? - “Interaction”. The one thing we missed most during the pandemic was interaction, we missed interaction with our friends, family and colleagues. The metaverse makes it possible to communicate with everyone on the planet without having to be physically there. The metaverse will allow you to live out your fantasies. You could be slaying enemies in multiplayer combat, or playing a quiet game of chess on the streets of Mumbai, or relaxing on the beach in Goa, all with incredible realism, but with the complete reassurance that you are completely safe at home. 3. Is Metaverse the next-generation social media platform? Version of the internet.

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II. WEB 3.0 – METAVERSE THE NEXT-GEN SOCIAL MEDIA

1) Web 1.0 was centered on information and servers that allowed you to search, explore, and build, typically through a centralized company's platform, such as Yahoo, Microsoft, orGoogle.
2) Social networking sites, blogging, and the monetization of user data for advertising on "free" social media platforms such as Facebook, SnapChat, Twitter, and TikTok became hallmarks of Web2.0.
3) Web 3.0 will serve as the metaverse's foundation. It will be made up of blockchain-enabled decentralized applications that will support a user-owned cryptocurrency and dataeconomy.

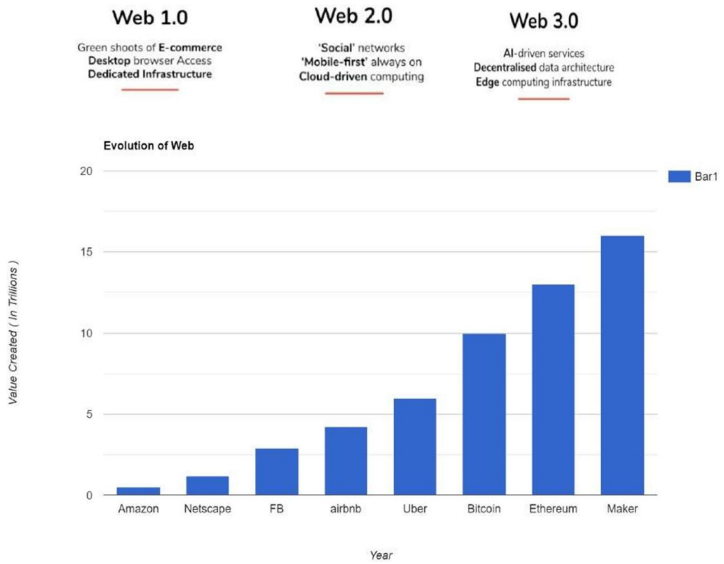


Fig.2: Evolution of Web
Data Source**:-** **https://crowdcreate.us**

The metaverse would be the next step in social media, and it would be light years ahead of where it is now. In the current era, we have images as our display pictures through which people identify us online, but in the metaverse, you will have an avatar, a fully three-dimensional living depiction of you but you in the way that you want to be did you ever wish you were three inches taller now you can be did you ever wish you had a bigger forehead now you can be you can be any gender you want, any race you want, you can be any age you want.

III. THE IMMERSIVE EXPERIENCE

1) The metaverse's entire concept is intertwined with artificial intelligence (AI), augmented reality (AR), and virtual reality (VR) technologies. We can embed virtual objects in the real world using augmented reality technology. VR, on the other hand, entails immersing yourself in a 3D virtual environment through the use of 3D computer modeling, one of the most fascinating types of graphic design. While wearing a VR Gear or other such accessories isn't required in the metaverse, experts are confident that virtual reality technology will become an integral part of the new metaverseecosystem.
2) We will most likely be able to access the metaverse through virtual reality headsets, smart glasses with augmented reality, and limited desktop and mobile applications.
3) One of the most difficult aspects of comprehending the metaverse is figuring out how it varies from today's virtual reality. Although virtual reality is a part of the metaverse, the metaverse as a whole is farlarger.
4) We can think of the metaverse as a large-scale, multipurpose entity that isn't limited to the VR/AR experience but is fully realized when these technologies are used. The metaverse has been compared to the next generation of the Internet in terms of offering a better user experience, with virtual reality serving as a means to thatend.

A. Use Cases of AR/VR Technologies for the Metaverse

1) Most people identify the metaverse with gaming, although there are many other applications because the metaverse's founders' overall purpose is to revolutionize how people interact with the Internet. So far, the gaming industry has been the first to reap the benefits of the virtual ecosystems' emergence.

2) Other firms and brands, in addition to the gaming industry, are attempting to follow the trend and discover ways to optimize its influence. Decentraland, for example, a decentralized business that leverages blockchain technology to market non-fungible tokens (NFT) as real estate, recently sold a digital plot of land to a Canadian investmentfirm.
3) With recent innovations in the metaverse, the virtual office environment may take on a new look, as we've already indicated. Unlike Zoom and Skype, which we are used to communicating with and cooperating with, this technology improves the sense of the entire team being present in one location. Similar use cases can already be found on the market. Virtuworx is a virtual reality and mixed reality business that provides tailored solutions for offices, virtual meetings, and otherevents.

IV. TRANSACTIONS IN THE METAVERSE

1) The transition from the physical to the virtual world would necessitate the creation of new technologies. The transition from the physical to the virtual world would necessitate the creation of digital assets, which, like real assets, would require ownership, which is where Blockchain and Crypto come into play. A blockchain is a digital ledger that is decentralized, distributed, and frequently public, and is made up of records called blocks that are used to recordtransactions.
2) On the blockchain, there are NFTs, which allow for the purchase or sale of one-of-a-kind digital artworks. Because of NFTs, users will have complete control over their digital assets within the Metaverse. Within the Metaverse, NFTs are required to create exclusive environments and to improve the digital community and socialexperiences.
3) The Bored Ape Yacht Club and CryptoPunks collections, for example, grant select users access to premium communities with password-protected content and even offlineparties.
4) The Metaverse's money is cryptocurrency, and each Metaverse has its own set of coins. They're used to pay for everything from NFTs to virtual real estate to avatar shoes. Ethereum is the second-largest cryptocurrency in terms of market capitalization, trailing behind Bitcoin. It's not only a top-rated coin, but it's also a development platform that creators use to create these Metaverses.
5) The majority of tokens, such as MANA and SAND, are ERC20 unit tokens without their own blockchains. To authenticate transactions and expand their operations, these tokens use Ethereum's network. On OpenSea, the world's largest NFT platform, Ethereum is also the most popularcurrency.

So, if you bought a bunch of LAND in Decentraland, the Metaverse would give you proof of confirmation in the form of NFTs, which the blockchain would guarantee.

A. *Creating a simple Metaverse NFT*

1) There are two types of tokens in Decentraland: the LAND token,which is used for governance, and the LAND token, which is used to buy virtuallands.
2) There's also a token that represents virtuallands.
3) The LAND token is an ERC20 token, which is a non-unique asset token standard. Each virtual land is represented by an ERC721 token, which is a standard for tokens that represent unique assets, also known as NFTs.
4) Programming Language :Solidity
5) IDE : Remix (Online)
6) Outcome : To create a metaverse NFT on the Blockchain that represents a virtual land.

Code:

```
//SPDX-License-Identifier: AFL-1.1 pragma solidity ^0.8.13;
import "hardhat/console.sol";

//OpenZeppelin - Is a library to create ERC721 tokens. Import 'https://github.com/OpenZeppelin/openzeppelin-
contracts/blob/master/contracts/token/ERC721/ERC721.sol';

//We declare our smart contract, which inherits from ERC721
// smart contracts are small program/code snippets used to represent a virtual land.
contract MetaverseNFT is ERC721
{
```

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```
    uint public nextTokenId;
    //We call the constructor of ERC721, with the name and symbol of our token. constructor() ERC721('Land', 'LAND') {}

 //Then we override the inherited _baseURI() function
//Which returns the base URL of the metadata server.
// Metadata Server is an off-chain server that returns a JSON object with the attribute of each virtual land, like its position on the map, and the URL to an image representing the land etc


 function _baseURI() internal pure override returns(string memory)
    {
        return 'https://https/path/to/metadata.server';
    }
    //Then there is the mint function to create new virtual lands
    function mint() external payable
    {
        //Check if enough ether wassent. require(msg.value == 1ether);
        //Then check that the maximum number of lands are reached yet. require(nextTokenId <10000);
        //the inherited _safeMint() function of ERC721 is used to create the new land.
        _safeMint(msg.sender, nextTokenId);
        //And finally we increment the tokenId, for the next time the mint() function is called
        nextTokenId++; console.log(nextTokenId);
    }
}
```

V. HOW A.I & WEB 3.O WILL UNLOCK THE METAVERSE

Learning data is one of the most important aspects of Machine Learning and Artificial Intelligence. When a model is fed historical data, it learns the previous model's outputs and can recommend new ones based on them. The more data and feedback from humans that is fed into the model, the better the model's outputs become. This is based on the belief that, in the future, AI will be able to develop, perform, and produce correct outputs in the same way that humans do.

1) *AIOps* - AIOps combines "big data and machine learning to automate IT operations activities, such as event correlation, anomaly detection, and causation determination," according to Wikipedia. These skills must be available not only to ensure the Metaverse infrastructure's stability, but also to provide actionableinsights.
2) *Enhanced Smart Contracts* - In keeping with the democratization theme, the Metaverse AI (and its decentralization layer) promises to make it simple for creators and users to exchange digital assets and entitlements, while also protecting ownership and ensuring that big tech giants aredisintermediated.

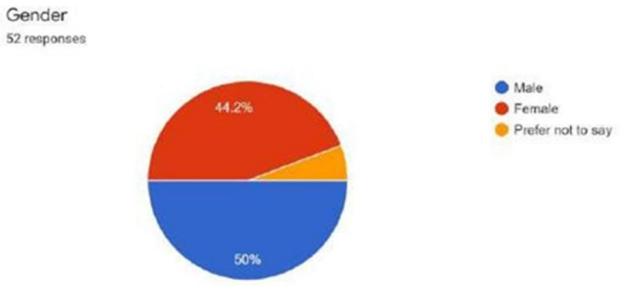
Creators will be able to create and manage their own content with Web 3.0, rather than relying on third-party software and hardware. Web 3.0 will streamline not just your tasks, but also your social network. Mediums like Twitter, YouTube, and Twitch should gain clout, bringing more opportunities to offer content to the table.
For example, Community exists only to strengthen the interactions between companies and their fans when it comes to connectivity. It's also not the only site that supports the creator economy. Then there are big companies like Nvidia, Microsoft, and Meta (formerly Facebook), which are putting billion-dollar investments into the metaverse, which creators are happy to embrace. According to Fortune's metaverse statistics, Nvidia's Omniverse has already surpassed 50,000 downloads, while Fortnite's virtual concerts attracted 10.7 million players.

VI. SURVEY ANALYSIS

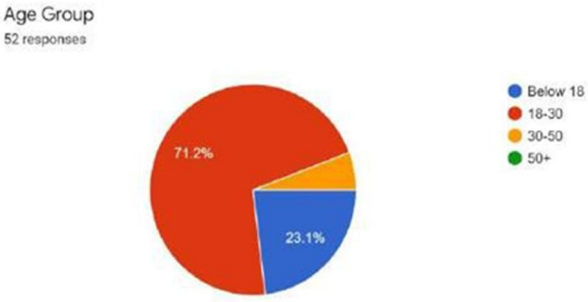
1) *Sample/Responses Collected:* From 52 people.
2) *Sampling Method Used:* Voluntary Sampling.

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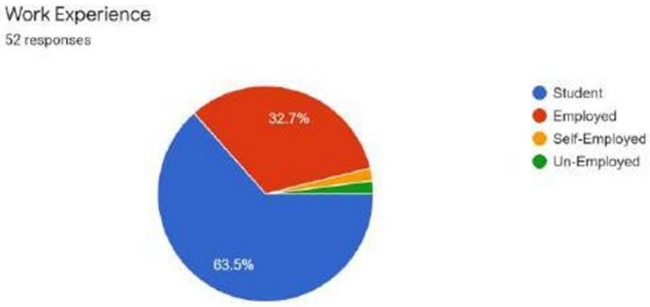
Let's take a closer look at the results of the survey to see what people really think about the Metaverse**.**



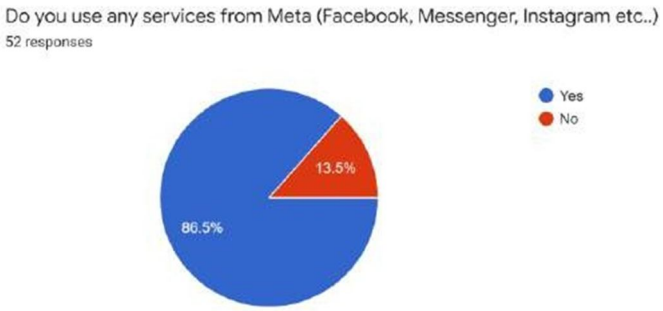
- Amongst the people that were surveyed, around 50 % were Male candidates.



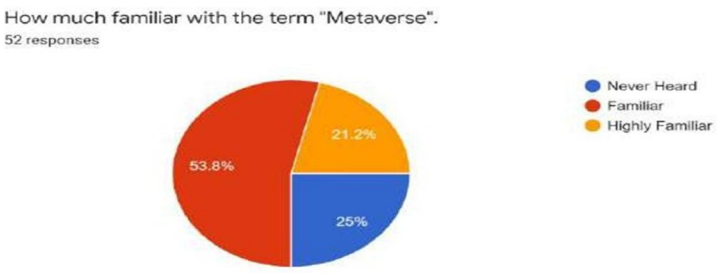
- Majority of the surveyed people belonged to the age group of 18-30.



- Majority of the surveyed people were either students or belonged to the working class.

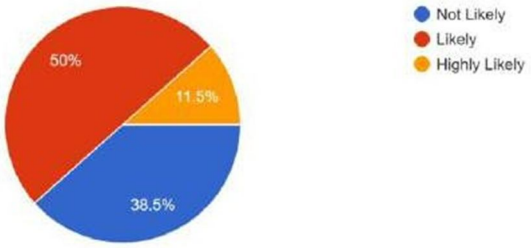


- Majority of the surveyed people were already using services from meta.



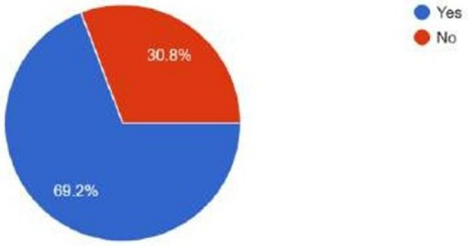
- Among the surveyed people 54.9% have heard the term “Metaverse” while 19.6% were highly familiar with it.

How much comfortable are you sharing data with Facebook/Meta.
52 responses



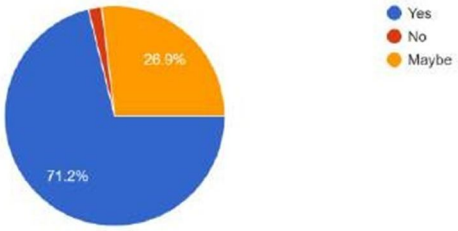
- Among the surveyed people 38.5% were not comfortable sharing data with services underMeta.

Comfortable with your child/younger sibling using services from Meta .
52 responses



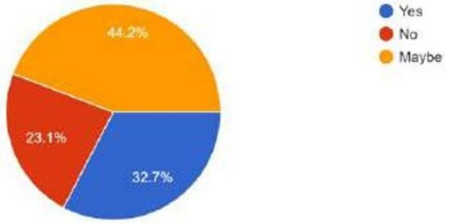
- Among the surveyed people about 69.2% were comfortable with their children using services from Meta.

If we were to be hit by another pandemic would you like to have a platform where you can interact with others without the need of physical presence ?
52 responses



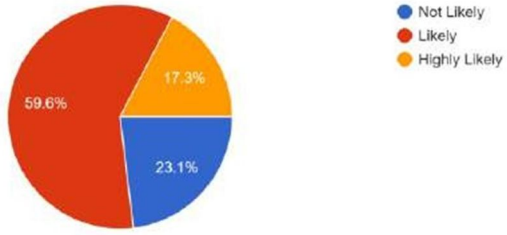
- Among the surveyed people around 71.2% would love to have an alternate way to interact with their loved one's in a pandemic-like situation.

Are you okay spending money on virtual goods ?
52 responses



- Among the surveyed people around 32.7% were okay spending money on virtual goods, 44.2% weren't sure while 23.1% weren't okay.

If Metaverse in a nutshell happens to replace current social interaction and make it more immersive without compromising on privacy how likely are you to use it ?
52 responses



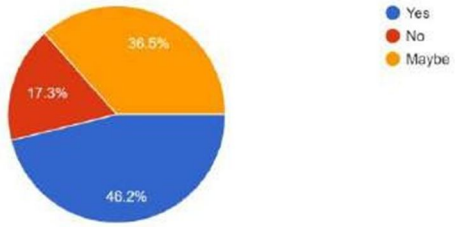
- A vast majority among the surveyed people are ready to accept metaverse as next-gen social media if it tackles their privacy issue.

Would you rather attend a lecture/class physically at the university or lets say watch a movie would you do it physically or virtually via Metaverse ?
52 responses



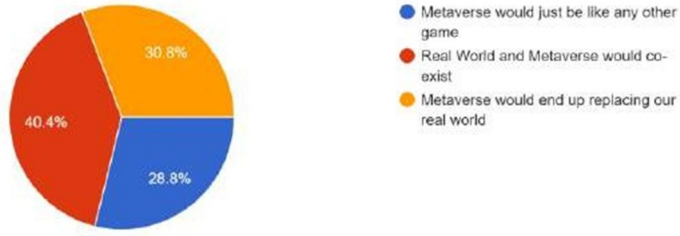
- When given an option of doing an activity in the physical world or Metaverse around 38.5% would prefer doing it in Metaverse.

Does the possibility of Metaverse ending the real life interaction between human's scare you ?
52 responses



- A large number of surveyed people believed that Metaverse might end real life interaction between humans.

How do you see a world where Metaverse is fully introduced and made available to everone in the society ?
52 responses



- Around 40% of surveyed people think that Metaverse and Real-world would co- exist and it won't end up replacing real world.

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VII. RESEARCH FINDINGS

People are willing to accept Metaverse as an option, but they are not interested in allowing Metaverse to take control of the real physical world, according to our survey. All people want right now is a new way to do things they already do on a daily basis that will spice up their lives or make them more convenient and enjoyable. The Metaverse would be an excellent entertainment platform, allowing for a more immersive and realistic experience.

VIII. CONCLUSION - IS METAVERSE ALL A MADNESS?

To summarize, the Metaverse generates a large amount of secondary and tertiary data as a result of the actions of many users. This data has a unique identification tag and is used as traceable data in the blockchain-based Metaverse. In the Metaverse, such data is becoming a valuable resource for artificial intelligence.

Metaverse employs artificial intelligence and blockchain technology to build a digital virtual environment in which you can safely and freely engage in social and economic activities that go beyond the boundaries of the actual world, and the adoption of these cutting-edge technologies will be expedited. In the ever expanding realm of the Metaverse, artificial intelligence and blockchain technology are expected to play a critical role.

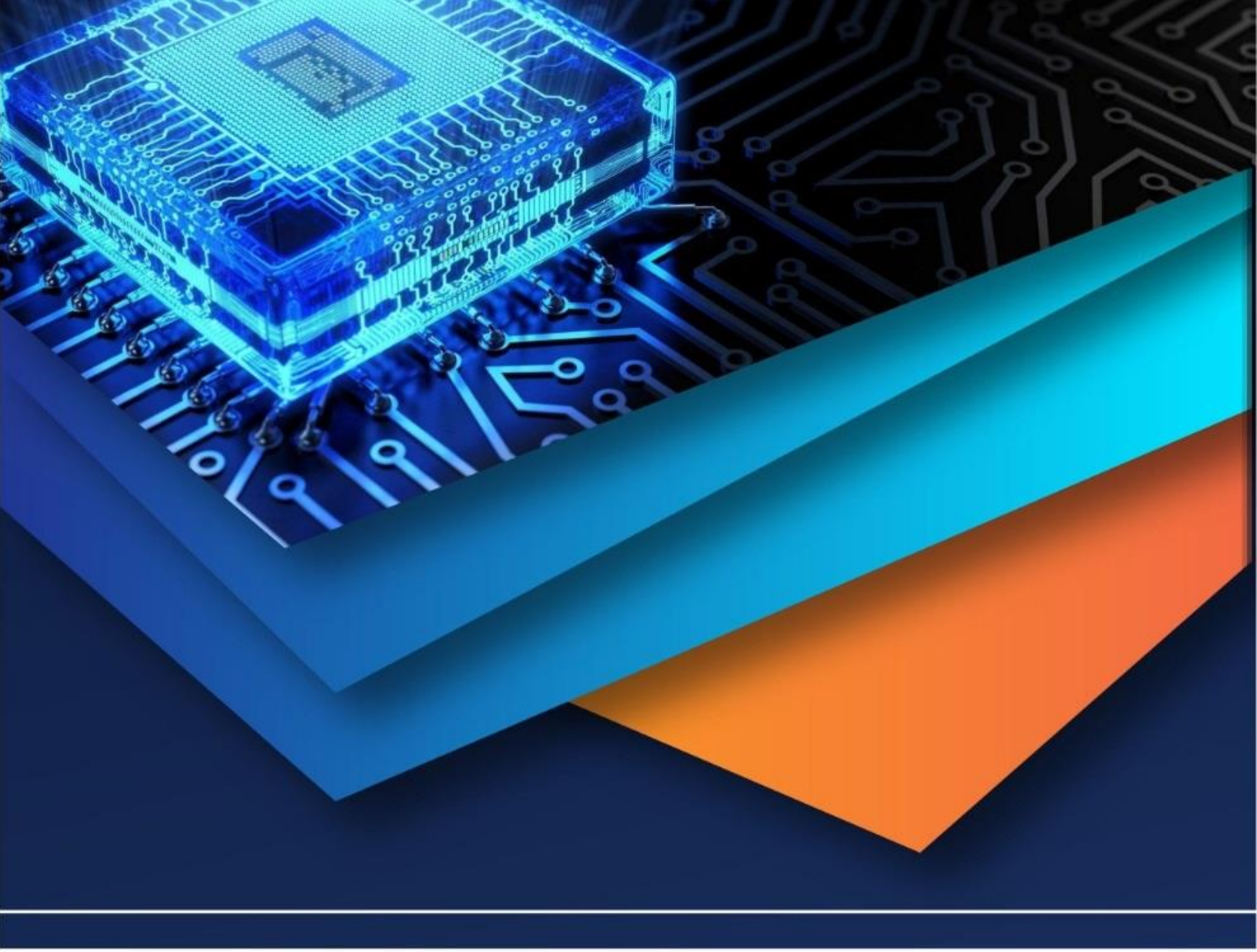
IX. LIMITATIONS AND FUTUREWORK

Metaverse is a technology that isn't 100% here yet. This research paper is solely based on the facts that are available now and as technology keeps evolving each day may be more and more people would start accepting the metaverse. The future work would much likely be a more focused one for the creators and the Gen Z who would more likely be the actual consumers of the metaverse.

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