iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** IV **Month of publication:** April 2022

DOI: https://doi.org/10.22214/ijraset.2022.41339

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue IV Apr 2022- Available at www.ijraset.com

Transparent Charity System using Smart Contracts on Ethereum using Blockchain

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Abstract: ***The paper looks at the chances of using blockchain technology for charitable purposes. To ensure data protection, fund integrity, and donation control, problems in this field necessitate the introduction of the latest storage tools and thus the transfer of knowledge between donors, foundations, donation recipients, and other charitable actors. Donors have doubts about how donated money is spent. Currently, blockchain technology is being implemented in several sectors. Blockchain technology allows you to make the method of donations and transactions of funds transparent. A single platform for tracking donations which will track all information about donations, transactions and donors has to be developed. This paper proposed a charity system supporting blockchain technology and expounds the planning pattern, architecture and operational process of the platform. Some core functions of the charity platform are realized and verified on Ethereum during this article. This blockchain system offers transparent accounts of operations donors, charitable foundations and donors supported blockchain technology, charitable platform should give transparent donation route, modify public user and donors to trace and cover where, when and to whom went resources of charity finances.***

Keywords: Donation System, Digital Charity, Tracking Donation, Charitable Foundations, Translucency.

I. INTRODUCTION

Charity is a critical part of a popular society. It's known that there are multitudinous incidents taking place in this world which cause woeful loss, whether it can be related to wealth or life and beget extensive damage every time. To recover from various types of losses, multitudinous tortures bear help from aid agencies, which can be financial aid to introductory requirements. People are now getting voracious to contribute to society. So, charity is a largely growing sector in the moment's world and it has evolved from its traditional organizational generalities to a decentralized crypto-currency predicated system. The traditional system in worldwide suffers from various problems, analogous as lack of translucence, lack of trust between donors and corruption. Blockchain could also be a remarkably transparent and decentralized way of maintaining this sort of varied charity predicated deals. So, a blockchain system will propose a blockchain predicated decentralized system that acts as a platform to contribute capitalists for donors to other stoners who have requested the donation and this is happening under maximum security and fulfilled trust.

II. LITERATURE REVIEW

In 2019, S. Hadi, D. Azamat, A. Sergey, "Platform for Tracking Donations of Charitable Foundations Based on Blockchain Technology"[1] proposed that most of the donations are in the informal sphere and donators do not know how their funds were spent. The main objective of the project is to develop the platform in which charitable organization will be integrated. Due to this the data on donations will be aggregated in one place and it will allow to prepare reports automatically. Hence, increase the transparency of charitable foundations by creating a common platform based on blockchain technology.

In 2020, H. Baokun, L. He, "Research on Charity System Based on Blockchain" [2] studied the supervision system of charity in China that lack transparency and has negative impact on the willingness of the people to donate and suggested to supervise charity in law, ministration, industry and society. They proposed that blockchain is decentralized, non-temperable, anonymous and traceable, that has great potential in transforming traditional industries. The blockchain can record all transaction information, whose process is efficient and transparent and the data is highly secure [6].

In 2019, S. Yachana, B. Kunal, S. Jagveer, G. Satish, "Online Transparent Charity System" [3] used the concept of the key fundaments of building a society is common interest or intention of the group members for various social and charity projects. The main concern is to improve the efficiency and effectiveness by building a social network donation mechanism that ensures transparency in the system. The study presents a review of cash collection sites, various models of donation and money collection process and the ways how the charity projects results are reported to their founders.

In 2021, P. Prashant, R. Gaurav, G. Nisha, B. Achal, Prof. K. Shradha, "Tracking Donations of Charitable Foundations using Blockchain Technology" [4] proposed the implementation of a blockchain-based system for monitoring donations. However, a focus on transparency can cause donors and recipients to be concerned about their privacy. As a result, a donation mechanism should be built that ensures both transparency and privacy. Using blockchain technology, the System provides transparent accounting of operations for donors, charitable foundations, and recipients. The donation tracking system should give a clear donation route, permitting public users and donors to trace and management wherever, when, and to whom charity funds are distributed.

In 2020, Z. Xianchen, W. Hanyang, "Developing a Reliable Service System of Charity Donation During the Covid-19 Outbreak" [5] proposed that in COVID-19 epidemic has brought many challenges to charity donation service system. The blockchain technology can be used for protecting the data security, defining access policies, ensuring the transparency of donations, and traceability of donation behaviors and it can also help to solve the problem of trust crisis. The purpose of the system is guaranteed by blockchain technology to speed up the responds to the need of the users in time.

In 2020, K. Ashutosh, G. Ashish, T. Amrish, B. Vinayak, "Blockchain based Trusted Charity Fund-Raising" [6] proposed that the system is decentralized and authentic platform. The blockchain technology will bring efficiency and allow for better policy pricing in insurance processes as well as better risk management. Here, charity has been developed gradually from traditional organizational concepts to decentralized crypto-currency based system. The purpose of the system is to donate money for donors to others users who have requested for donation and it is done under security and trust.

III. PROPOSED SYSTEM

The charity system model proposed is shown in Figure 1. There are four roles: donors, beneficiaries, organizations and cooperative stores.

The charity organizations get the knowledge of seeking help and do charity projects through the platform. Donors study charity projects on the platform, then donate to beneficiaries or the charity organizations.

Beneficiaries upload their information to the platform for help, they're going to get and spend tokens in cooperative stores. The transactions occurring within the stores are to be uploaded to the charity platform.

The cooperative stores supply services or goods to the beneficiaries to urge tokens. The tokens are often exchanged for real money by charity organizations. The flow of funds has been completely recorded on the blockchain, which permits transactions to be tracked and funds prevented from being abused.

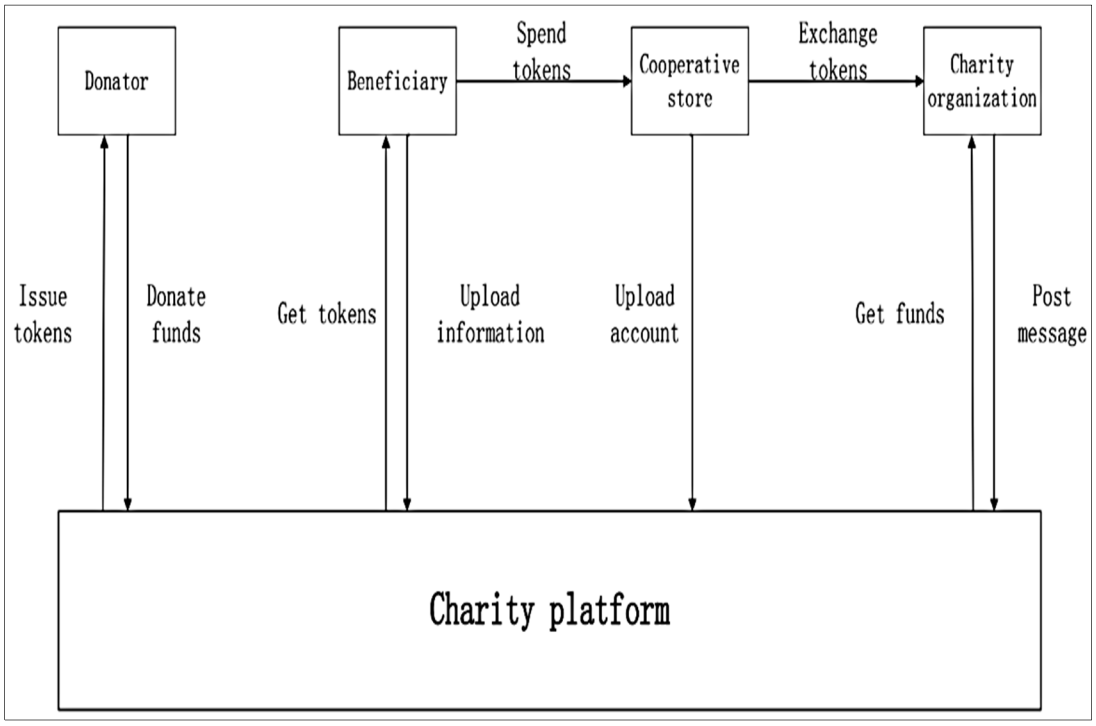

Figure 1. Proposed System

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A. Proposed Platform Architecture

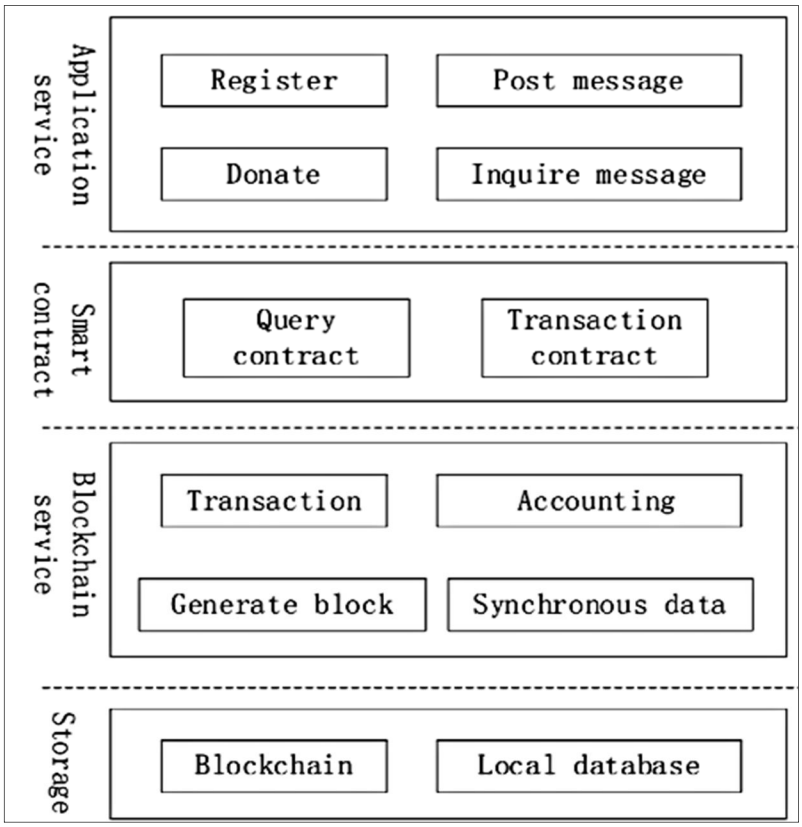

Figure 2. System Architecture

The platform is divided into four layers, as shown in Figure 2. The application service layer encapsulates a spread of applications, together with account registration, post charity data, give funds, and inquire message, provides users with the functions of the platform directly. The smart contract layer includes numerous scripts and smart contracts. It encapsulates question strategies, transaction methods and different details. The blockchain service layer implements the functions of distributed accounting of the charity platform, together with package block, getting agreement on group action, broadcast block, and synchronizing information to area information. The storage layer is employed to store information, together with blockchain storage and native storage.

IV. METHODOLOGY

The following methodologies are used:

A. Blockchain

Blockchain technology is most easily outlined as a decentralized, distributed ledger that records the source of a digital plus. By inherent design, the info on a blockchain is unable to be modified, which makes it a legitimate disruptor for industries like payments, cybersecurity and healthcare. Blockchain may be a shared, immutable ledger that facilitates the method of recording transactions and tracking assets during a business network. An asset is often tangible (a house, car, cash, land) or intangible (intellectual property, patents, copyrights, branding). Virtually anything useful is tracked and traded on a blockchain network, reducing risk and cutting costs for all involved. Blockchain is true for delivering that information because it provides immediate, shared and completely transparent information stored on an immutable ledger which can be accessed only by permissioned network members. A blockchain network will track orders, payments, accounts, production and much additional. And because members share one view of the reality, you'll see all details of a transaction end-to-end, supplying you with greater confidence, also as new efficiencies and opportunities.

B. Ethereum

Ethereum is a decentralized blockchain platform that establishes a peer-to-peer network that executes and verifies application code called smart contracts. Smart contracts allow participants to transact with one another without a trusted central authority. The transaction records in the smart contracts are immutable, verifiable, and securely distributed across the network, giving participants full ownership and visibility into transaction data. Transactions are sent from and received from the accounts created by user on Ethereum. A sender must sign transactions and spend Ether, Ethereum's native cryptocurrency, as a price of processing transactions on the network. Ethereum may be a technology that's home to digital money, global payments, and applications. The community has built a booming digital economy, bold new ways for creators to earn online, then far more. It's hospitable everyone, wherever you're within the world – all you would like is that the internet.

C. Solidity

Solidity is an object-oriented, high-level language for implementing smart contracts. Smart contracts are programs which govern the behaviour of accounts within the Ethereum state. Solidity is a curly-bracket language. It is influenced by C++, Python and JavaScript, and is designed to target the Ethereum Virtual Machine (EVM). Solidity is statically typed, supports inheritance, libraries and complex user-defined types among other features. With Solidity, you can create contracts for uses such as voting, crowdfunding, blind auctions, and multi-signature wallets. When deploying contracts, you should use the latest released version of Solidity. This is because breaking changes as well as new features and bug fixes are introduced regularly. It offers comprehensive support for complicated approaches in user-defined programming alongside inheritance and libraries.

V. SCREENSHOTS OF OUTPUT

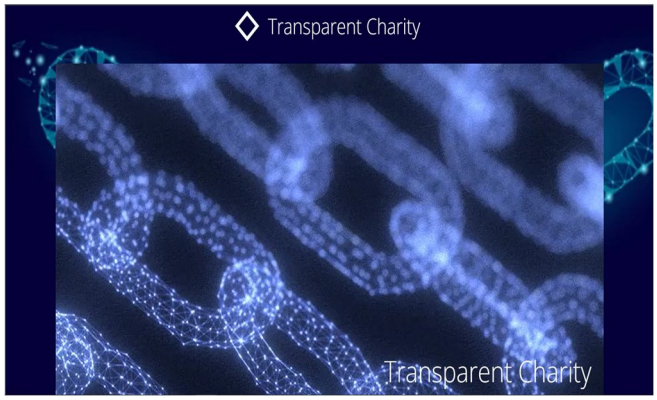

Fig 3. Home Page Part -1

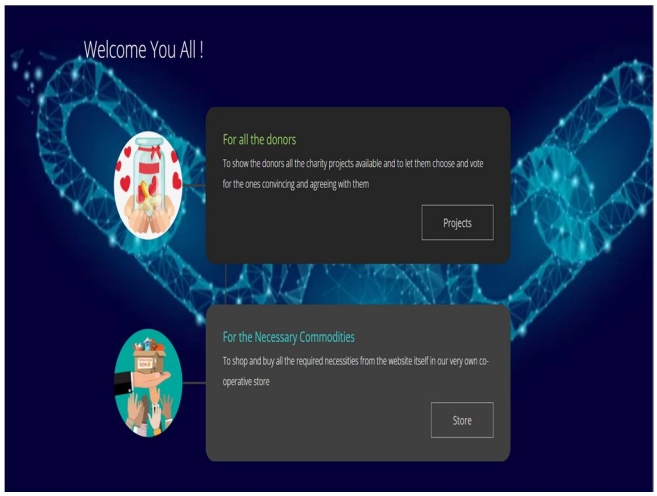

Fig 4. Home Page Part - 2

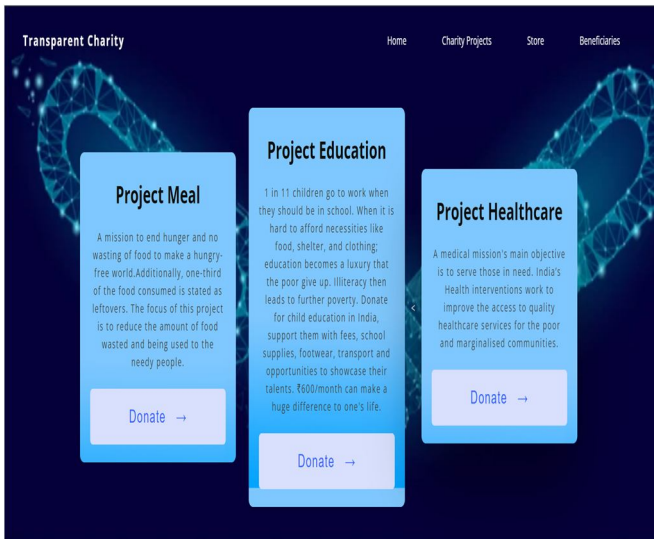

Fig. 5. Charity Projects Page

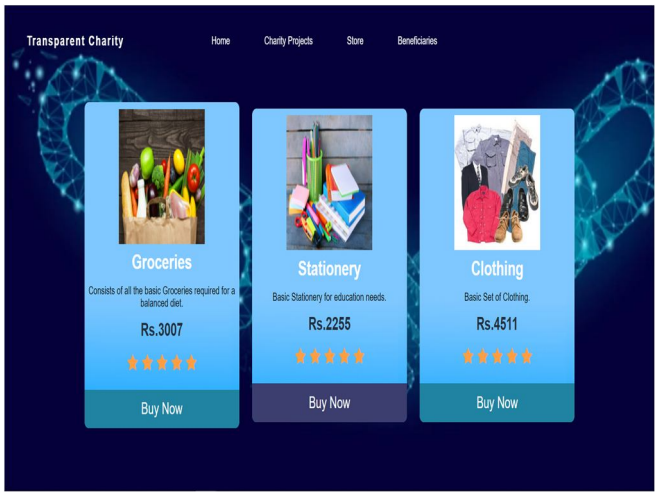

Fig. 6. Store Page

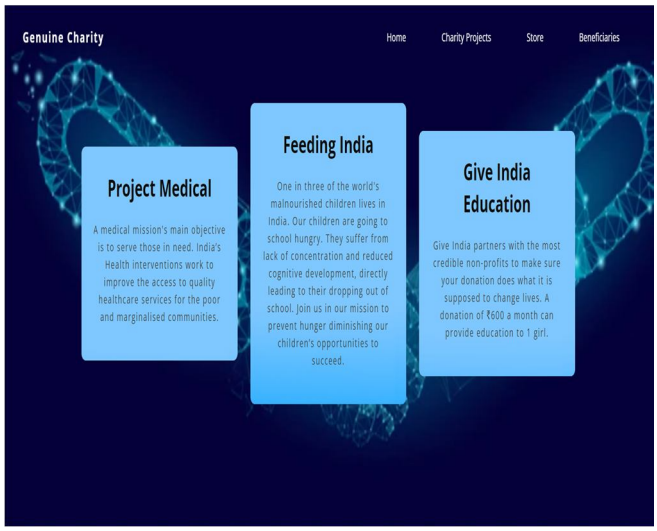

Fig. 7. Beneficiaries Page

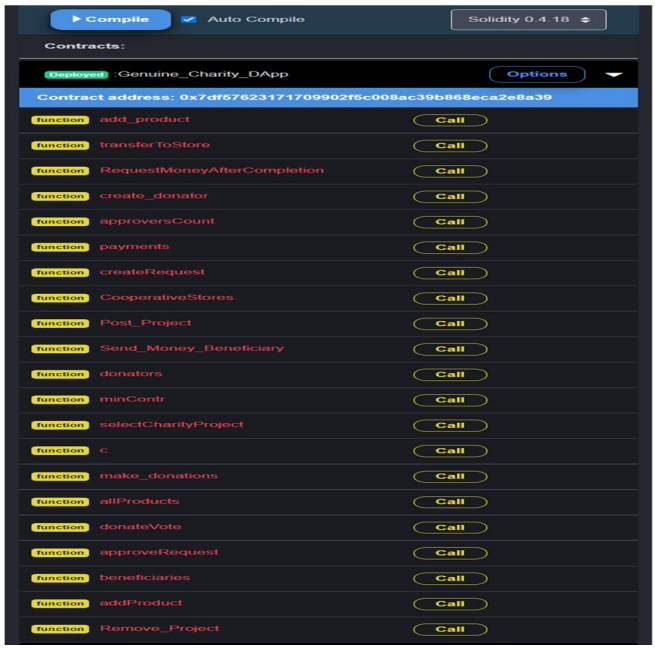

Fig 8. Deployment of Smart Contracts

VI. SCOPE

Many fake charity organizations pose as genuine and loot money from innocent people within the name of charity. Most people want to donate money to an honest explanation for charity, but they're unsure if the cash goes to succeed in the proper hands of the destitute. The blockchain system will bring transparency to the online charity trusts. Contributors can see the journey of the donation in real time and ensure if it's reaching the deserving hands or not.

VII. CONCLUSION AND FUTURE WORK

A system is proposed using Blockchain for charity work to form it more transparent through a decentralized system. This system will provide both the requirements which are better authenticity and security. Also, it will provide with a trusted system and will make the entire process more transparent. This will help get rid of middlemen between donors and charity donors. Because the system doesn't believe an intermediary to transfer funds, the speed and price for handling aid is reduced. it'll also help to extend revenues, or a minimum of reduce the quantity of criticism from those that react negatively to budget cuts. It will also help to increase revenues, or at least reduce the amount of criticism from those who react negatively to budget cuts. Future Work - MySQL is used as a centralized data storage (off-chain storage). Functions and procedures for quick interaction with the database have been developed.

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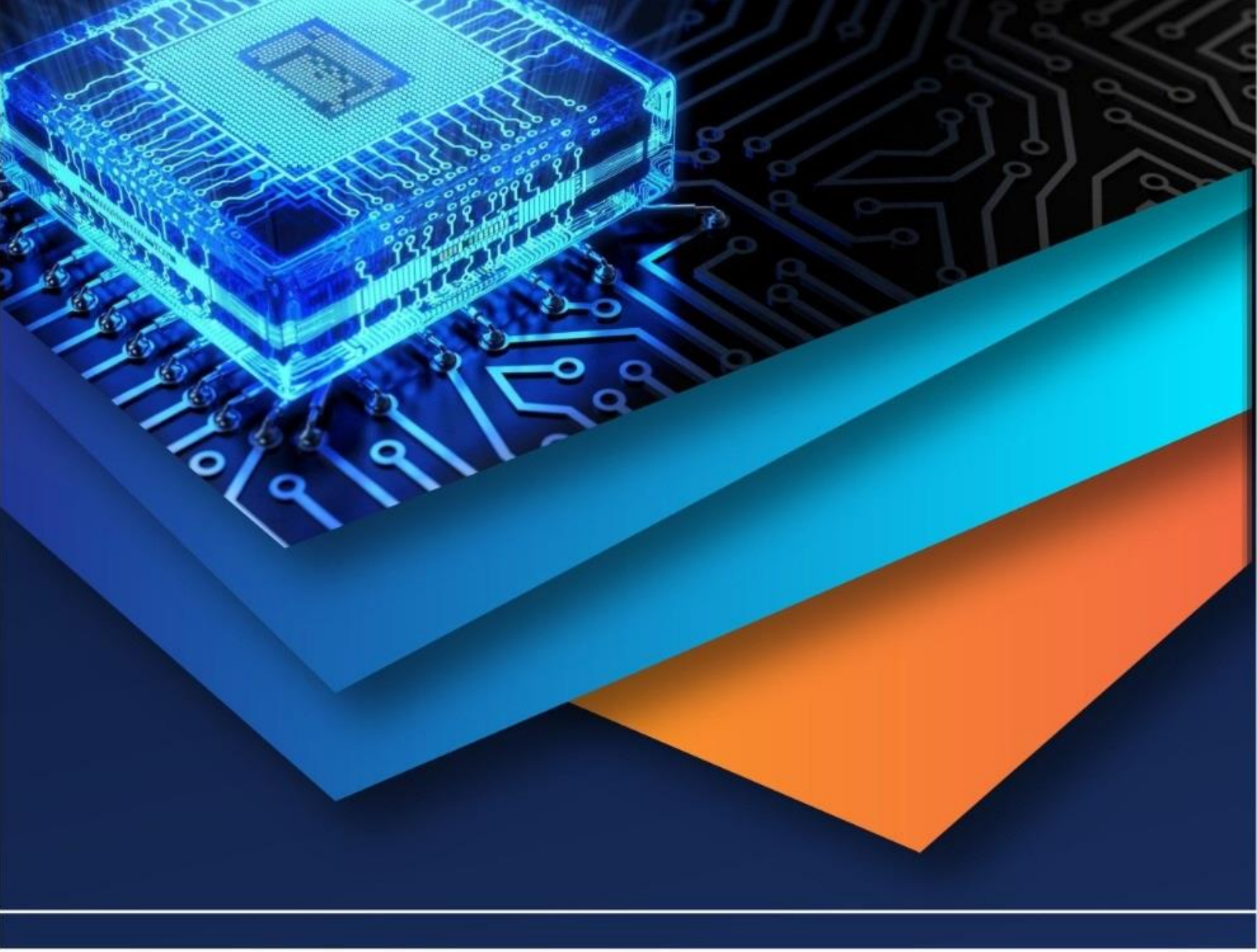

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