iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** IV **Month of publication:** April 2023

DOI: https://doi.org/10.22214/ijraset.2023.50472

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue IV Apr 2023- Available at www.ijraset.com

Design and Development of Ethereum based Crowdfunding using Blockchain Technology

Kaustubh Anavkar[1], Ashish Vishwakarma[2], Rohit Sardar[3], Prof. Vivek Pandey[4]
Department of Computer Engineering, University of Mumbai, Alamuri Ratnamala Institute of Engineering and Technology, Maharashtra, India

Abstract: ***A growing number of enterprises, including start-up firms, artistic activities, and charitable causes, are being funded through crowdfunding. Traditional crowdfunding websites, on the other hand, struggle with a variety of issues, including prohibitive pricing, a lack of transparency, and fraud concerns. These issues have led to an increase in the use of blockchain technology as a crowdfunding platform. A decentralized, open-source ledger using blockchain technology safely and permanently records transactions. It provides several advantages for crowdsourcing, including decreased costs, increased transparency, and improved efficiency. Blockchain technology has the potential to open up crowdfunding to a wider range of investors, particularly those in developing countries with limited access to traditional financial institutions. Blockchain technology can be utilised for crowdfunding and smart contracts as well. Numerous procedures associated with crowdfunding, such as fund disbursement and investor verification, can be automated thanks to these self-executing contracts. Automation allows for a significant reduction in administrative work and a faster, more precise crowdfunding procedure. The goal of this article is to advance understanding regarding the application of crowdfunding using blockchain technology. We'll review the body of literature on blockchain and crowdfunding, take into account the benefits and drawbacks of doing so, and offer a framework for implementing blockchain-based crowdfunding. Our study will contribute to the growing body of knowledge on blockchain and crowdfunding, which will be helpful to policymakers, company owners, and investors interested in using blockchain for crowdfunding.***

Keywords: internet, peer-to-peer network, smart contracts, blockchain, and crowdfunding.

I. INTRODUCTION

Blockchain technology's most fundamental implementation is a distributed, decentralised book that records the history of a digital object. Since the information contained in a blockchain cannot be altered by design, it has the potential to legally disrupt industries such as payments, cybersecurity, and healthcare. Due to its scalable transparency, ability to lower risk, and ability to completely eradicate fraud, blockchain is an incredibly revolutionary and exciting technology. The crowdfunding technique leverages the group efforts of a sizeable number of people, particularly online, and helps to increase the exposure and reach of their networks by utilizing social media and crowdfunding platforms. Actually, crowdfunding is a substitute method of raising money for businesses. In the past, you would have needed to perfect your business plan, market research, and prototypes if you wanted to raise money to launch a company or present a new product. The next step would be to pitch your plan to a small group of affluent people or organizations. It is challenging to generate money because it requires trust between numerous parties, including funders, middlemen, and organizations that serve as a holding place for recipients' temporary finances. The main tool that fundraising organisations employ to get donors to provide money to recipients is trust. Their main challenge in obtaining money for the organisation is earning the trust of contributors. Technology is used by many nonprofit organizations to make it simple for donors to donate money to them. Technology plays a big part in this, but trust is still the most important factor in getting the most money. Since the decentralised network is spread, all of the records are preserved at each node. Crowdfunding is a quick and easy approach to raise money for new project ideas. The problem with the current crowdfunding industries is that they frequently engage in fraud and have greater prices. This kind of problem can be avoided by implementing a crowdfunding strategy using blockchain technology.

II. EXISTING SYSTEM

The length of the undertaking, the expected utilization of the funding, and the task's class were found to be the critical variables in the progress of the current examination's decisions. The at present accessible models neglected to accomplish high precision. The notable, at present working crowdfunding stages, including Kickstarter and Indiegogo, are perceived as remunerations based stages. Crowdfunding sites that depend on gifts incorporate GoFundMe and Crowdrise.

Crowdfunding for admirable missions is conceivable on Indiegogo and even Kickstarter. This should be finished, in any case, inside the limits of every stage's guidelines. For example, an individual will not have the option to give cash that was raised to a foundation or a specific reason.

Around the world, there are a ton of crowdfunding sites. Crowdfunder, AngelList, CircleUp, Fundable, Early Offers, Seedrs, and Crowdcube are a couple of them. These stages are famous in the USA, the UK, and Europe. At the end of the day, it tends to be seen from the ongoing framework that the group is adding to raising support by laying out an organization of brilliant people who have fabulous undertaking thoughts that would help society. In light of issues with the ongoing framework, including security and outside mediation, we want one that is safer and straightforward.

III. LITERATURE SURVEY

Table1- Literature Review

Sr. No	Author	Year	Title	Literature Details	Relevance to Proposed System
1	K. Bhavya Sri J. S. Supriya M. Pranathi Sai	March 2020	Crowdfunding Using Blockchain	Traditionally, crowdfunding has been done by means of occasions and house to house raising money. Notwithstanding, there are parcel of chance elements like security of your business thought, fostering a fruitful group subsidizing effort is a work and tedious. Swarm subsidizing isn't a foundation, expenses charged, hazard of disappointment and so forth.	To keep away from the current issues like concentrated framework, confidential record, hacking, twofold spending, and value-based charge of current group financing framework, execution of proposed framework in this paper is the arrangement.
2	Gururaj H L V. Janhavi	January 2021	Decentralised application for crowdfunding using blockchain technology	In this paper, a proposition for decentralized stage for crowdfunding is made. In the prorposed framework, end of center specialists as well as individuals who are responsible for leveling the framework is finished.	The outcomes got from framework referenced by us shows the viable working of the framework in this way, making it profoundly secure, simple, and straightforward when contrasted with the current framework which is a unified and center man framework. The undertaking upholds the initiators through a GUI.
3	Ritvik Gupta Mayank Yadav Usha Dhankar	May 2022	Crowdfunding using Ethereum Blockchain	The issue with the current crowdfunding organizations is that they charge extra expenses and in some cases tricks occur.	In the framework proposed by us there is no cash charged.
4	Nikhil Yadav Sarasvathi .V	August 2020	Venturing Crowdfunding using Smart Contracts in Blockchain	The ongoing group financing procedure is that, outsider medium try not to give the confirmation of the cash financial backer contributed for the venture and financial backer don't have command over the money they contributed.	Blockchain innovation considers straightforward exchanges that can be seen by anybody on the organization, which can make trust between project makers and financial backers.

5	Vimal Gupta Nikunj Garg Siddharth Seth Naincy Rastogi	January 2023	Crowdfunding using Blockchain Technology: A Review: Blockchain Crowdfunding	Executing severe digital regulations for blockchain. Advancing efforts through web-based entertainment stages to make more individuals mindful about crusade.	Users can promote the campaign on their socials in our systems.
6	K VIDYA Hussain Imthiaz Hussain Vishal Celestine Vishwa Kumar	September 2022	Security Enhanced Crowdfunding Using Blockchain and Lattice Based Cryptosystem	Expectedly, crowdfunding has been completed by means of occasions and house to house raising money. Notwithstanding, there are part of chance highlights like security of your business thought, fostering a fruitful group financing effort is a work and tedious. Swarm financing isn't a cause, expenses charged, hazard of disappointment and so on.	To stay away from the current issues like concentrated framework, confidential record, hacking, twofold spending, and value-based charge of current group financing framework, execution of proposed framework in this paper is the arrangement.
7	Saniya Zad Zishan Khan Tejas Warambhe Rushikesh Jadhav	January 2023	Crowdfunding Using Blockchain Technology	• Restricted scope: The paper centers explicitly around youthful possible business people, and that implies that the discoveries may not be generalizable to different populaces or gatherings. • Absence of exact information: The paper might depend on episodic proof and individual encounters, as opposed to observational information, which can restrict the strength of the ends.	• Perceived benefits: The paper discusses the perceived benefits of crowdfunding, which can include access to a large pool of potential investors, marketing and publicity, and validation of the product or service. • Identification of barriers: The paper identifies the barriers that might prevent young entrepreneurs from posting a project on a crowdfunding platform, which can help to address these barriers and create a more supportive ecosystem for crowdfunding.
8	Arjun Menon Kaustubh Kadam Pranav Kumar Subash Kumar Shah	January 2023	Decentralized Crowdfunding Using Blockchain	The primary objective of the paper is to make it feasible for benefactors to really subsidize any undertaking by creating savvy gets that permit givers to impact the cash spent in the venture and that additionally empower supporters and task supervisors to effectively fund-raise for projects.	The framework proposed by us make it feasible for benefactors to really finance any venture by creating savvy gets that permit givers to impact the cash spent in the task and that likewise empower patrons and undertaking directors to effectively fund-raise for projects.

9	Prof. Swamiraj Jadhav Bhanu Pratap Singh Shruti Pawar Swanad Meher	December 2022	Blockchain Based Crowdfunding System	Traditionally, crowdfunding has been completed by means of occasions and house to house raising support. Notwithstanding, there are parcel of chance elements like security of your business thought, fostering an effective group financing effort is a work and tedious. Swarm subsidizing isn't a cause, expenses charged, hazard of disappointment and so on.	To avoid the existing problems like centralized system, private ledger, hacking, double spending, and transactional fee of current crowd funding system, implementation of proposed system in this paper is the solution.
10	Priya Shelke Shreyas Zanjal Rishikesh Patil Digvijay Desai	November 2022	Blockchain Technology Based Crowdfunding Using Smart Contracts	Conventionally, crowdfunding has been carried out via events and door-to-door fundraising. However, there are lot of risk features like security of your business idea, developing a successful crowd funding campaign is an effort and time consuming. Crowd funding is not a charity, fees charged, risk of failure etc.	To avoid the existing problems like centralized system, private ledger, hacking, double spending, and transactional fee of current crowd funding system, implementation of proposed system in this paper is the solution.

IV. METHODOLOGY

1) Figure out the Issue and the Needs: Identifying the problem that an application is supposed to solve and the requirements that it must meet is the first stage in developing any application. Creating a crowdfunding platform that is more transparent, secure, and efficient than present practises is the task at hand. There may be references to user authentication, project submission and approval, money management, and transaction tracking in the specs.

2) The next stage is to choose a blockchain platform that complies with the standards after they have been set. The Ethereum platform was chosen because it supports smart contracts and offers the features needed for the project.

3) Create the Smart Contract: Self-executing software programmes known as smart contracts, which are recorded on the blockchain, can be used to automate a number of functions on a crowdfunding platform, such as fund distribution, milestone confirmation, and reward distribution. The smart contract needs to be created to satisfy the application's requirements and rigorously tested to guarantee that it performs as planned.

4) Create the Web Application: After the smart contract is created, the web application that will communicate with the blockchain must be created. The programme needs to be user-friendly, safe, and simple to operate. Users should be able to start and fund projects, browse project information, and keep track of their contributions using the front-end. In order to develop and maintain the blockchain, the back-end needs communicate with the blockchain.

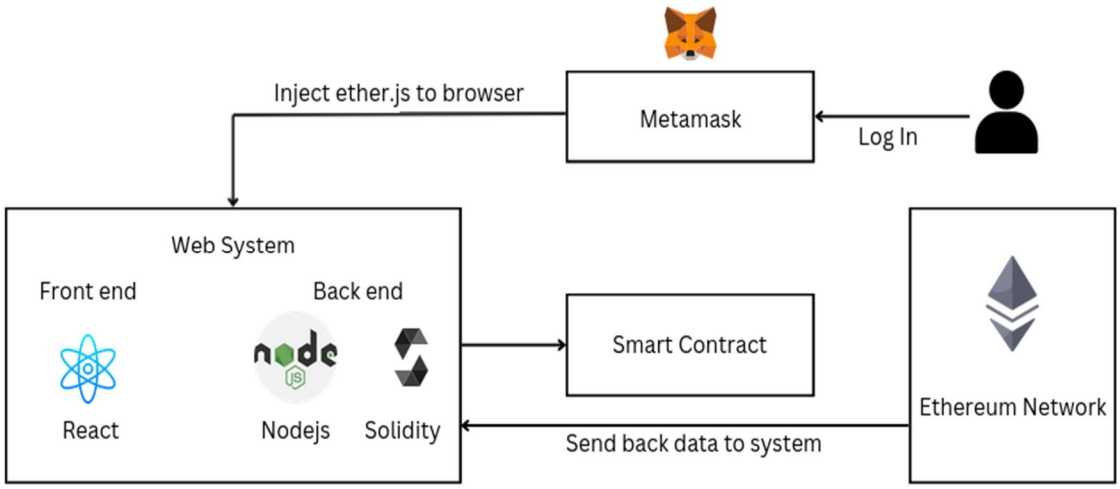
5) Test the application: To make sure the programme is operating as expected, it should be thoroughly tested before being deployed. Functional testing should check that every feature is operating as intended, load testing should check that the application can manage a large number of users and transactions, and security testing should check that the programme is safe.

6) Deploy and Maintain the Application: The application can be deployed to a production environment after it has undergone extensive testing. Monitoring the application for performance and security issues, as well as updating it as necessary to solve any problems that may occur, are all parts of maintenance.

V. PROPOSED SYSTEM

To transfer the money to the client, the following conditions must be met:

1) The person who is starting the fund will make a campaign and list it on the site.
2) The webpage will showcase each and every project.
3) To locate the project he or she wishes to sponsor, the financier will browse the portal.
4) Next, based on the amount that he or she is contributing. A supporter or regular contributor is someone who contributes at least the minimum level set by the fund's creator.

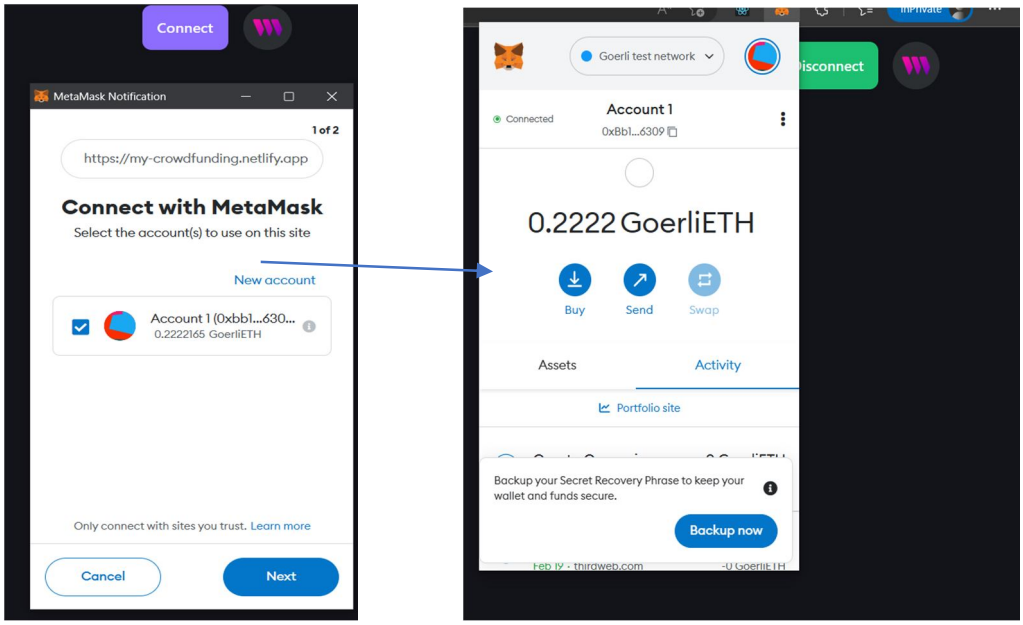


(Fig.1) System Design

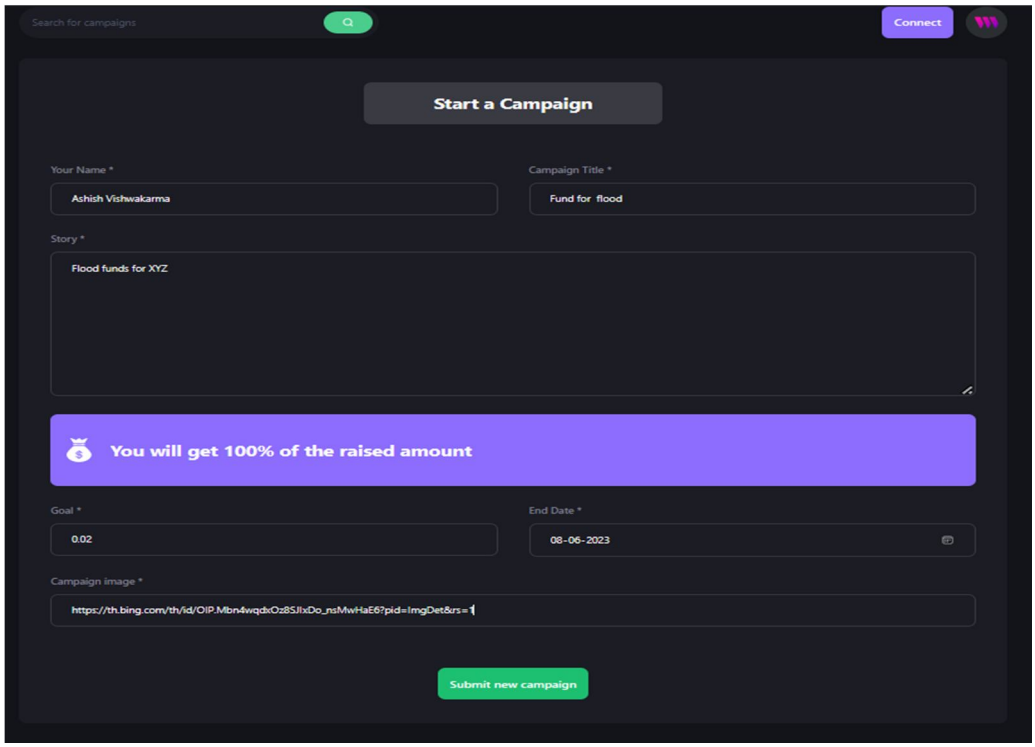
VI. IMPLEMENTATION

In order to perform any transactions, be it creation of a campaign or contributing to one, a user first needs to connect an Ethereum wallet to the site. We have made use of a browser extension called Metamask to connect the wallet, which can be used to authorize transactions for cryptocurrency.

The process is as shown in the below flow:

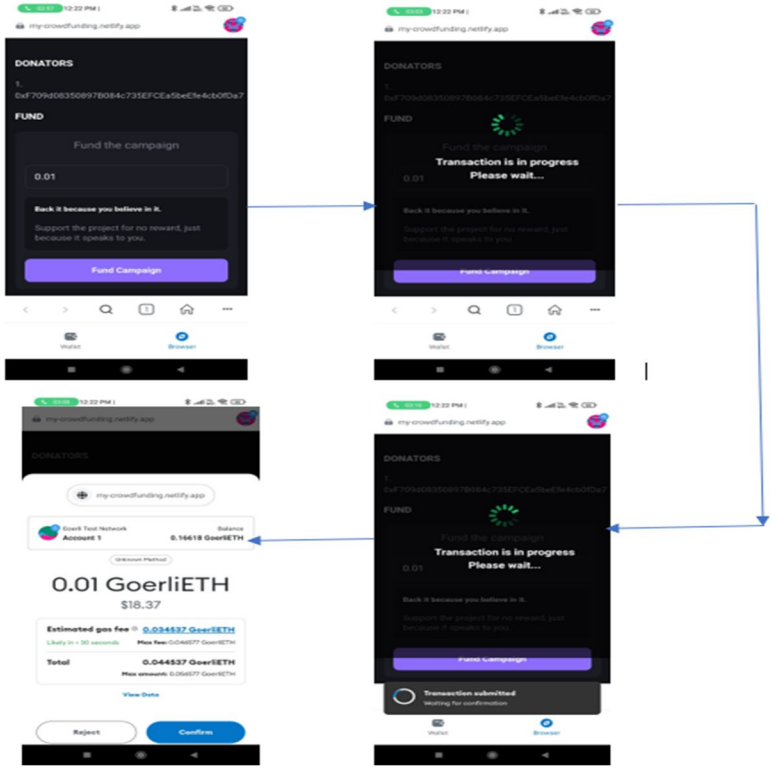


(Fig.2) CONNECTING WALLET TO THE WEBSITE



(Fig.3) CAMPAIGN DETAIL FILLING

Any user whose wallet has been connected to the app can contribute to a campaign. The process is simple and detailed in the flow below. The user only needs to select the campaign, scroll down and enter the amount he wishes to contribute, and then authorize the transaction (in this case, with the Metamask extension).



(Fig.4) FUNDING CAMPAIGN PROCESS

VII. CONCLUSION

In this essay, we discussed alternative, more secure, transparent, and verifiable ways to raise money through crowd fundraising. The use of blockchain technology, which operates on a trust-free manner, can address the security concerns in crowdfunding platforms.

Blockchain technology offers simple, safe, and practical ways to trade information and move money. The incorporation of blockchain technology in crowdfunding contracts could offer the much-needed solution to the problems that crowdfunding contracts face in terms of abuse, trust, and confidentiality. The system is programmable and, if necessary, may be expanded to accommodate any further requirements in the Crowdfunding contract. Despite the idealistic perception of blockchain technology, it can solve the majority of secure transactions concerns.

REFERENCES

[1] Vivek Pandey and K. Rarhi, "A Brief Systematics Visualization of blockchain technology in healthcare and insurance: A bibliometrics Analysis," 2021 2nd International Conference on Computational Methods in Science & Technology (ICCMST), Mohali, India, 2021, pp. 252-260, doi: 10.1109/ICCMST54943.2021.00060.

[2] H L, Gururaj & Janhavi, V. & Holla, Abhishek & Kumar, Ashwin & Bhumika, R. & Goundar, Sam. (2021). Decentralised application for crowdfunding using blockchain technology. International Journal of Blockchains and Cryptocurrencies. doi: 2.8.10.1504/IJBC.2021.117809.

[3] Sri, K. & Supriya, J. & Sai, M. & Pinnamaneni, Siva. (2020). Crowdfunding Using Blockchain. International Journal of Scientific Research in Computer Science, Engineering and Information Technology. 128-134. doi:10.32628/CSEIT1206233.

[4] Gupta, Ritvik & Yadav, Mayank & Dhankar, Usha. (2022). Crowdfunding using Ethereum Blockchain. International Journal for Research in Applied Science and Engineering Technology. 10. 3386-3390. doi:10.22214/ijraset.2022.43130.

[5] Yadav, Nikhil & .V, Sarasvathi. (2020). Venturing Crowdfunding using Smart Contracts in Blockchain. 192-197. doi:10.1109/ICSSIT48917.2020.9214295.

[6] Gupta, Vimal & Garg, Nikunj & Seth, Siddharth & Rastogi, Naincy & Rawat, Sur & Kumar, Rajiv. (2023). Crowdfunding using Blockchain Technology: A Review: Blockchain Crowdfunding. Global Journal of Innovation and Emerging Technology. 1. 8-14. doi:10.58260/j.iet.2202.0107.

[7] VIDYA, K & Hussain, Hussain & Celestine, Vishal & Kumar, Vishwa & Robert, Noel. (2022). Security Enhanced Crowdfunding Using Blockchain and Lattice Based Cryptosystem. doi:10.21203/rs.3.rs-2020457/v1.

[8] Zad, Saniya & Khan, Zishan & Warambhe, Tejas & Jadhav, Rushikesh & Alone, Vinod. (2023). Crowdfunding Using Blockchain Technology. SSRN Electronic Journal. doi:10.2139/ssrn.4330476.

[9] Menon, Arjun & Kadam, Kaustubh & Kumar, Pranav & Shah, Subash. (2023). Decentralized Crowdfunding Using Blockchain. SSRN Electronic Journal. doi:10.2139/ssrn.4324640.

[10] Jadhav, Prof & Singh, Bhanu & Pawar, Shruti & Meher, Swanad & Deshpande, Sudhanshu. (2022). Blockchain Based Crowdfunding System. International Journal for Research in Applied Science and Engineering Technology. 10. 258-261. doi:10.22214/ijraset.2022.47860.

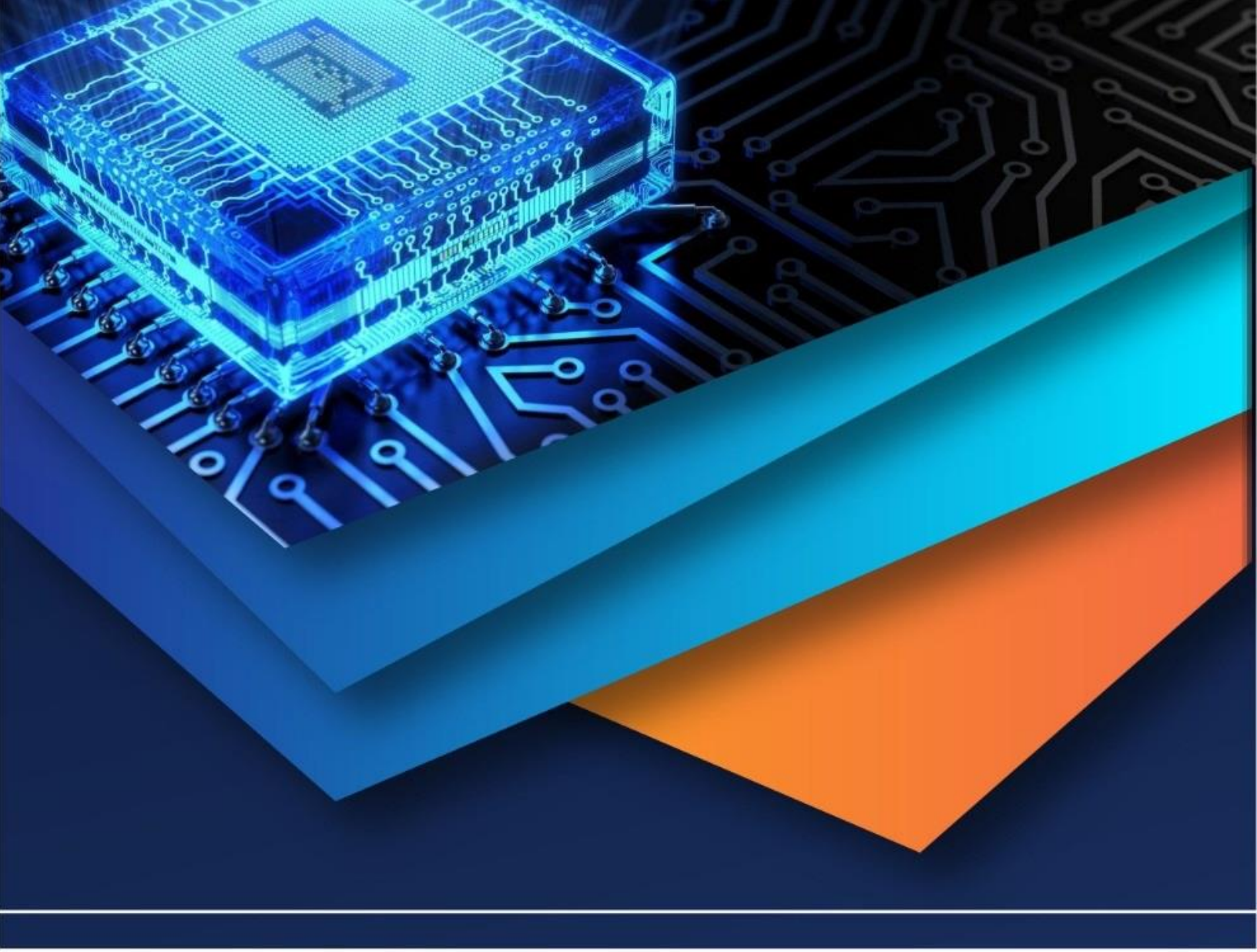
[11] Shelke, Priya & Zanjal, Shreyas & Patil, Rishikesh & Desai, Digvijay & Chavan, Harish & Kulkarni, Varad. (2022). Blockchain Technology Based Crowdfunding Using Smart Contracts. 939-943. doi:10.1109/ICAISS55157.2022.10010749.

[12] Maharshi Shah, Priyanka Kumar, Tamper Proof Birth Certificate Using Blockchain Technology, International Journal of Recent Technology and Engineering (IJRTE), Volume-7, Issue-5S3, February 2019.

[13] Arshad Jamal, Rabab Alayham Abbas Helmi, Ampuan Siti Nurin Syahirah, Mariam-Aisha Fatima, Blockchain Based Identity Verification System, 21 November 2019.

[14] Zhao, J.L., Fan, S. & Yan, J. Overview of business innovations and research opportunities in blockchain and introduction to the special issue. Financ Innov 2, 28 (2016).

[15] Jiin-Chiou,Narn-Yih Lee, Chien Chi, YI-Hua Chen, Blockchain and Smart Contract for Digital Certificate, Proceedings of IEEE International Conference on Applied System Innovation 2018.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY