

Digital Document Verification System Using Blockchain

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Abstract: Blockchain technology has emerged as a revolutionary solution to address these issues, providing a decentralized, secure, and tamper-proof platform for digital document verification. This paper explores the concept of Digital Document Verification using blockchain technology, highlighting its distributed ledger architecture and cryptographic security features, which are essential for fostering trust and guaranteeing the integrity of verified documents. In today's increasingly digital world, confirming documents and identities is crucial across a multitude of industries, from finance and healthcare to legal and education. security elements, which are essential for maintaining the integrity of validated documents and fostering confidence.

Additionally, this study clarifies how the openness and immutability of blockchain technology support a strong foundation for document verification. 1. Identity Verification: Blockchain makes it feasible to create unchangeable digital identities, which eliminates the need for centralized middlemen and allows for the safe verification of people's identities. Documentation for the supply chain: Companies may reduce fraud and mistakes by tracking and confirming the legitimacy of supply chain documents, including contracts, invoices, and shipping records.

Keywords: Decentralization, Blockchain, Document Verification, and Supply Chain

I. INTRODUCTION

Originally intended to serve as the foundation for digital currencies such as Bitcoin, blockchain has developed into a flexible and safe distributed ledger system. It is a perfect fit for digital document verification because of its fundamental ideas of decentralization, immutability, transparency, and cryptographic security. Blockchain has the ability to establish a tamper-proof and trustless environment for document verification by utilizing these qualities, which might lower fraud, improve security, and expedite procedures in a variety of sectors. The idea of "Digital Document Verification Using Blockchain" is examined in this article.

To sum up, this study aims to demonstrate how blockchain technology has the potential to revolutionize the field of digital document verification. Blockchain has the potential to revolutionize trust and security across sectors by using decentralization, cryptographic protections, and transparency, opening the door to a more effective and secure digital future. The main ideas, applications, difficulties, and future possibilities of blockchain-based digital document verification will be covered in further detail in the parts that follow.

The project focuses on developing a system that leverages technologies such as a QR codes, blockchain Digital signature, or secure databases to verify documents electronically. The system ensures that documents are issued, stored, and verified in a temper-proof and transparent manner, significantly reducing the risk fraud. By streamlining the verification process. The system enhances trust, saves time, and improves operational efficiency for institutions and users alike.

II. LITERATURE REVIEW

Zainuddin and Choo (2022):- This paper explores the development of a document verification system leveraging blockchain technology to ensure integrity, authenticity, and tamper-resistance of digital documents. The work is part of



a growing body of literature addressing the limitations of traditional document verification methods, which often rely on centralized authorities and are vulnerable to forgery and manipulation.

Shivam S. Singh, Omkar R. Meher:- This paper introduces a blockchain-based framework aimed at resolving common issues in digital document verification, such as fraudulent modifications, lack of authenticity, and centralized trust dependence. The authors propose a system that leverages blockchain's immutability and decentralized validation mechanism to create a secure and reliable verification process for digital documents.

Yick, Jennifer:- The authors categorize WSNs based on network structure, node capabilities, and communication models, offering detailed insights into the design trade-offs among energy efficiency, scalability, latency, and reliability. The paper systematically reviews key aspects of WSNs.

Tubaishat, M., & Madria, S. (2003):- The authors explain the basic architecture of a sensor network, typically involving numerous sensor nodes deployed in a target area, which collect data and transmit it to a central base station. They address key challenges and design considerations.

Yang, L. D. (2011):- In this technical paper, Yang (2011) presents the practical implementation of a wireless sensor network (WSN) using Texas Instruments' EZ430-RF2500 development kits and MSP430 microcontroller boards. The work is aimed at demonstrating how low-power embedded systems can be effectively utilized to construct a functional sensor network with basic sensing and communication capabilities.

III. OBJECTIVES

To develop a secure and tamper-proof document verification system

Utilize blockchain technology to ensure that once a document is registered, it cannot be altered or falsified.

To eliminate the need for centralized authorities in the verification process

Create a decentralized platform that allows users to verify document authenticity without relying on third-party verification services.

To ensure the integrity and authenticity of digital documents

Use cryptographic hashing to uniquely identify each document and detect any modification.

To implement a transparent and verifiable document validation mechanism

Store document fingerprints (hashes) on a blockchain ledger that is accessible for public or authorized verification.

To enable fast, automated, and scalable document verification

Replace manual verification procedures with smart contracts that validate documents instantly.

To support real-world use cases such as educational certificates, legal documents, and business records

Design the system to be flexible and adaptable across multiple domains requiring document authentication.

IV. SCOPE

The Digital Document Verification System Using Blockchain aims to provide a secure, decentralized platform for uploading, storing, and verifying digital documents. The scope of the project includes both the technical implementation and the application range of the system.

V. METHODOLOGY

The methodology for implementing a Digital Document Verification System Using Blockchain involves a systematic approach that integrates cryptographic hashing, blockchain storage, and smart contract-based verification. Requirement analysis, system design, development, testing, and deployment are the many stages of the process.

Requirement Analysis

- Problem Identification: Traditional document verification systems are vulnerable to forgery, require central authorities, and often involve manual verification.

System Design

- Frontend: Web-based user interface for uploading, verifying, and viewing document statuses.
- Backend: The server that manages data, hashing, and blockchain communication.



Data Flow

- Document Upload: User uploads a document.
- Hashing: System generates a SHA-256 hash of the document (not the file itself).
- Blockchain Storage: The hash, timestamp, and user identifier (optional) are stored on the blockchain via a smart contract.

Verification Process:

- A document submitted for verification is rehashed.
- The system checks if the hash exists on the blockchain.
- If a match is found, the document is verified.

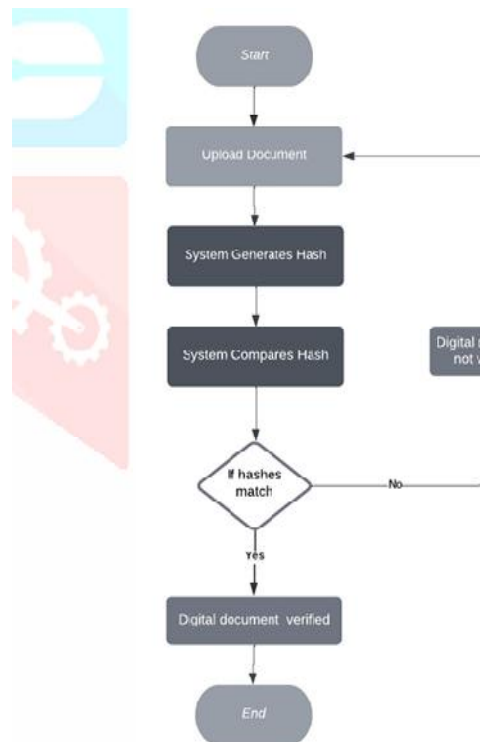


Fig. workflow Diagram

VI. BENEFITS OF PROPOSED SYSTEM

- The Digital Document Verification System Using Blockchain offers enhanced security, transparency, and efficiency by leveraging blockchain's immutable and decentralized nature.
- It eliminates the need for centralized authorities, automates document verification through smart contracts, and provides a tamper-proof and easily accessible verification process.
- This system ensures data integrity, reduces verification costs, and enables faster processing, making it highly scalable and applicable across various industries such as education, legal, and business.
- By offering a secure, transparent, and cost-effective solution, it fosters trust and compliance while enabling global, borderless document verification.



VII. OUTCOMES

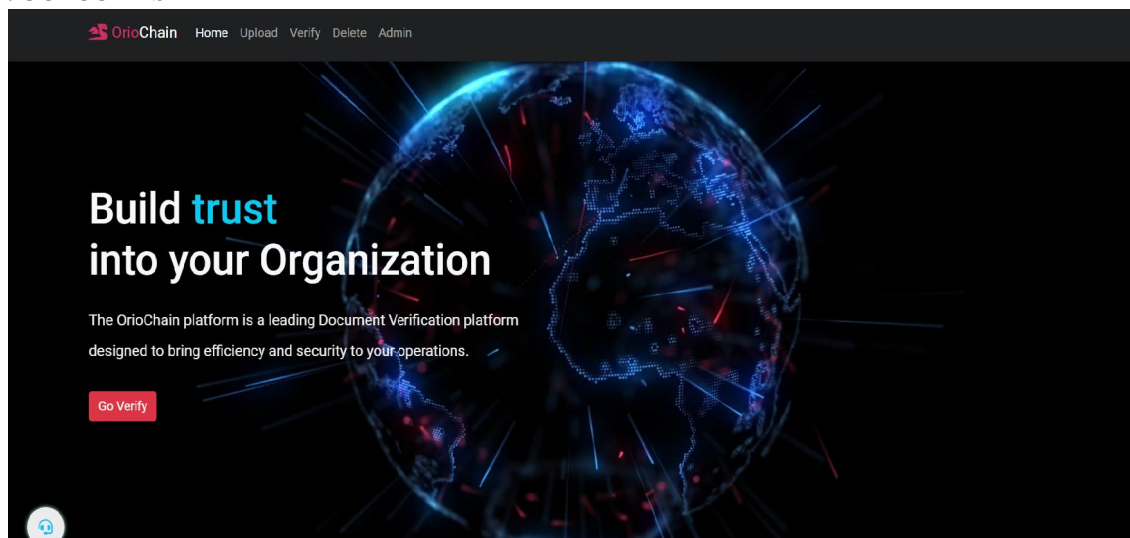


Fig. Dashboard

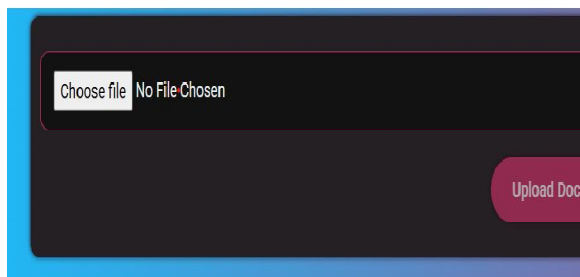


Fig. Document Upload

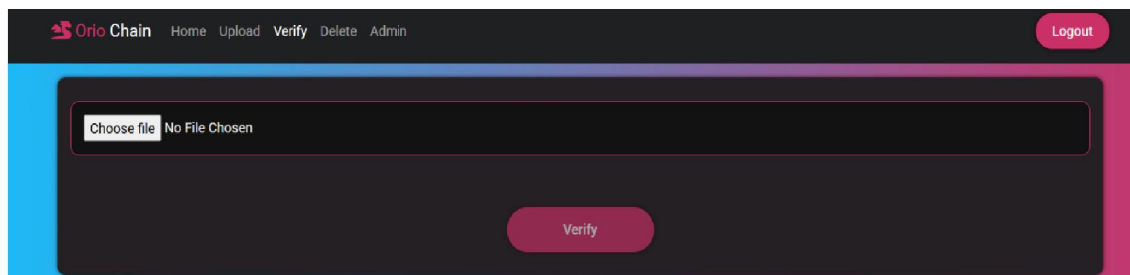


Fig. verify page





Fig. QR generation



Fig. Delete document

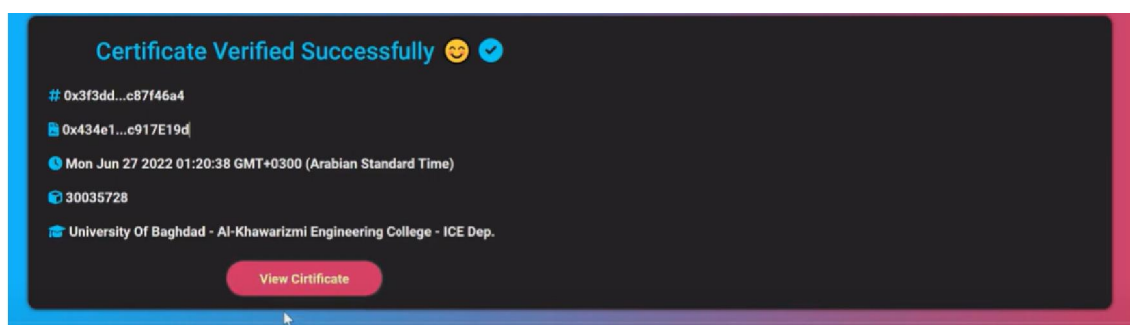


Fig. Valid Result



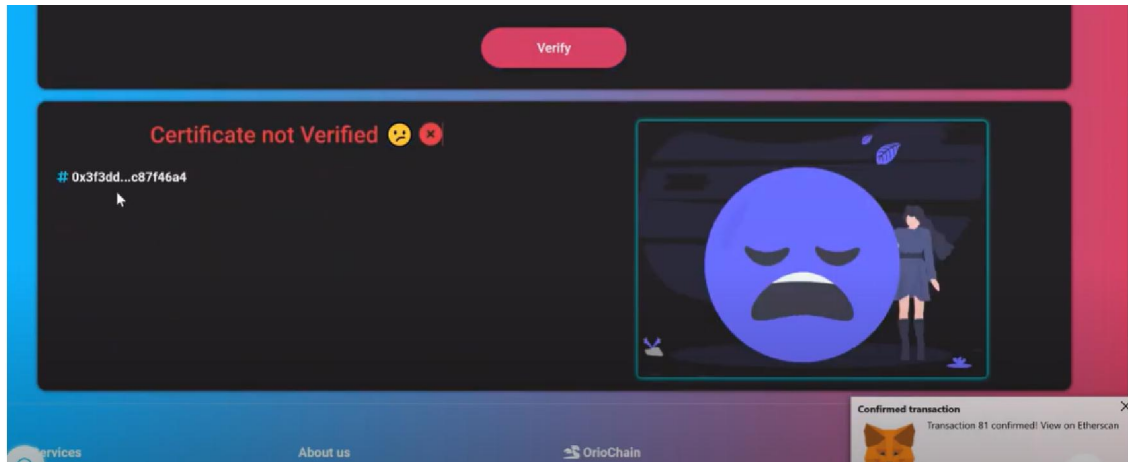


Fig.

Invalid Result

VII. CONCLUSION

Blockchain technology adoption for digital document verification has enormous potential to solve the issues of efficiency, security, and trust in the digital era. This literature review has shown the transformational potential of blockchain technology by examining its basic characteristics, applications, and real-world applications.

The groundbreaking potential of blockchain technology in the area of digital document verification is highlighted in the conclusion of this research study. Organizations may create a more secure, effective, and reliable digital future where fraud is reduced, document verification procedures are expedited, and trust is strengthened in an increasingly digital environment by utilizing blockchain's advantages and resolving its drawbacks.

VIII. ACKNOWLEDGMENT

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REFERENCES

- [1]. Muhammad Dhiyaul Rakin Zainuddin and Kan Yeep Choo," Design a Document Verification System Based on Blockchain Technology" (MECON 2022)
- [2]. Mr. Shivam S Singh, Mr. Omkar R Meher, Mr. Nikhil D Mundokar, Mr. Tejas B Choudhari" DIGITAL DOCUMENT VERIFICATION SYSTEM USING BLOCKCHAIN" ISSN:2320-2882.
- [3]. Yick, Jennifer, Biswanath Mukherjee, and Dipak Ghosal. "Wireless sensor network survey." Computer networks 52.12 (2008): 2292-2330
- [4]. Tubaishat, M., & Madria, S. (2003). Sensor networks: an overview. IEEE potentials, 22(2), 20-23.
- [5]. Yang, L. D. (2011). Implementation of a wireless sensor network with EZ430-RF2500 development tools and MSP430FG4618/F2013 experimenter boards from Texas instruments

