Chapter 10
Healthcare Records Maintenace in Smart Cities for Healthcare 4.0:
A Approach With Blockchain

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ABSTRACT

Healthcare records management systems are essential for ensuring the security, integrity, and accessibility of patient data. Data breaches, unauthorized access, and inefficiencies in data sharing are all issues that traditional systems face. This chapter describes a novel approach to healthcare records management that incorporates block chain technology, specifically Ganache, Truffle, Meta Mask, and the MEAN stack. Meta Mask improves the user experience by providing a secure and easy-to-use authentication mechanism. The MEAN stack aids in the creation of a responsive and dynamic web application. The proposed system's design, implementation, and testing are all part of the research methodology. Security assessments, performance benchmarks, and user feedback are all examples of evaluation metrics. The results show increased data security, streamlined access controls, and improved data sharing capabilities.

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MOTIVATION

The impetus for this project derives from the urgent need to solve the various flaws in healthcare record administration. Current systems are vulnerable to data breaches, lack transparency, and suffer from data silos, all of which impede timely patient treatment and research. Block chain technology provides a decentralized, secure, and tamper-proof system that has the ability to transform healthcare records. We hope that by using this technology, we will be able to give patients more control over their data, increase data integrity, expedite interoperability across healthcare providers, and ultimately improve patient outcomes. The initiative aims to solve these critical challenges by leveraging block chain's disruptive potential in healthcare.

Project Objective

The primary goal of this project is to design, create, and test a viable block chain-based system for managing healthcare records. This system will strive to secure data security, integrity, and patient privacy while also allowing for smooth data interchange across healthcare providers. Specifically, the project aims to establish a secure patient identity verification system, a decentralized ledger for healthcare information, and safe, patient-controlled data sharing. Furthermore, the project will investigate healthcare regulatory compliance as well as the practicality and scalability of block chain technology in healthcare. The project's ultimate goal is to deliver a comprehensive solution to improve the healthcare records management environment.

SCOPE OF THE PROJECT

The goal of this project is to conceptualize, design, create, and test a block chain-based healthcare records management system. It will entail looking at existing block chain technology and healthcare data standards, as well as creating a proof-of-concept application. The project will prioritize data security, privacy, and integrity, as well as patient consent management and compatibility with existing healthcare systems. It should be noted, however, that this project will not address the comprehensive integration of the proposed system into the larger healthcare infrastructure, but would instead provide a basic framework for future deployment and adoption in the healthcare sector.

ROLE OF AUTHORS

The authors collectively bring a diverse range of expertise and experiences vital to the conception, development, and realization of this research. Dr. Rohit Rastogi led the conceptualization and design phase, leveraging their extensive knowledge in healthcare informatics and block chain technology. Mr. Prabhinav Mishra contributed significantly to the technical implementation, particularly in integrating Ganache, Truffle, Meta Mask, and the MEAN stack, drawing from their expertise in software development and block chain architecture. Mr. Rayush Jain played a pivotal role in data analysis and evaluation, employing their statistical proficiency to assess system performance and security metrics. Mr. Shahjahan provided critical insights into the healthcare domain's requirements and implications, ensuring the system's alignment with industry standards and user needs. The collaborative effort and synergy among the authors were instrumental in every phase of this research, from ideation to experimentation