



iJRASET

International Journal For Research in
Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 Issue: VI Month of publication: June 2020

DOI: <http://doi.org/10.22214/ijraset.2020.6101>

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Medical Data Sharing Framework with Face Detection Authentication using Block Chain

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Abstract: *The objective of this work for sharing a medical record maintaining the authentication security and explaining the essential design considerations along with the working principle and operation logics w.r.t the blockchain technology to the cooperative healthcare ecosystem. In addition, we combine the emerging blockchain technology, via constructing a consortium blockchain linking patient records, hospital data, health bureaus, and healthcare communities for comprehensive healthcare data sharing and care audit ability.*

Keywords: *Access control, block chain, healthcare, medical data, face detection, privacy and security*

I. INTRODUCTION

We focus on using blockchain technology to facilitate the sharing and management of the electronic sharing of medical records. The reasoning on how chain code can bring cross-organizational, validation, and automation of medical data sharing procedure can be presented. A cross-organizational, medical record sharing framework is proposed, and accordingly, the system is implemented to demonstrate the key features. The privacy concerns as a result of the intrinsic trust matter across-parties introduce excessive administration costs for the data-sharing process. Patients are concerned about the potential abuse of their EMR data while sharing across different parties requires time-consuming procedures with a lot of trust and manpower engaged to make data finally accessible, which hinders the continuous development of the healthcare system being exposed to novel treatment technologies. Therefore, an effective EMR data management system is essential to enable easy, secure and ethical data sharing and thus unleash the power of data science whilst the data owners still retain control over their medical data. A blockchain battery-powered health info exchange might unlock the verity price of ability. Block chain-based systems have the potential to scale back or eliminate the friction and prices of current intermediaries. The promise of blockchain has widespread implications for stakeholders within the health care scheme. Capitalizing on this technology has the potential to attach fragmented systems to get insights and to raised assess the worth of care. In the future, a nationwide blockchain network for electronic medical records may improve efficiencies and support better health outcomes for patients

II. LITERATURE REVIEW

Shuai Wang received the master's degree in control engineering from the University of Chinese Academy of Sciences, Beijing, China, in 2015. He is currently pursuing the Ph.D. degree with the State Key Laboratory for Management and management of advanced Systems, Institute of Automation, Chinese Academy of Sciences, Beijing.

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III. EXISTING SYSTEM

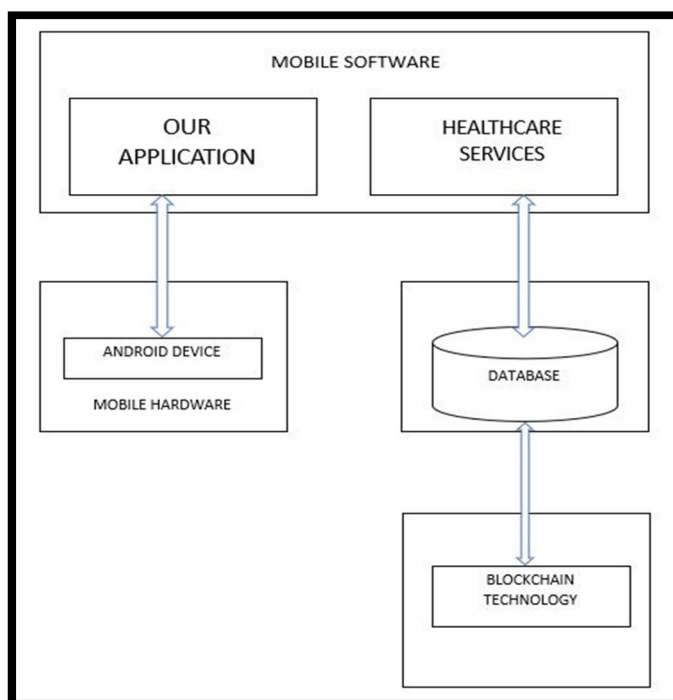
Cyber physical systems, give an opportunity to use these technologies to interact with the physical world and automate physical processes in different fields, such as medicine, and introduce new level of interaction when systems interact with people. Cyber-physical systems are used in multiple areas such as traffic management and security, automotive engineering, industrial and process control, energy saving, ecological monitoring and management, industrial robots equipment, biological systems technology and so on. Comparing these areas, it must be assumed that healthcare cyber-physical systems will be tightly related with interaction with people, which implies that such systems must be the most accurate, precise and with extremely minimal probability of error to occur. There is an existing detailed taxonomy already that was developed specially for a healthcare CPS. Existing healthcare cyber-physical systems were mapped to this taxonomy like CPS applications (Electronic Medical Records, Medical CPS and Big Data Platform, Smart Checklist), daily living applications (LiveNet), medical status monitoring applications (CodeBlue, AlarmNet), medication intake applications (iCabiNET).

A. Drawbacks of Existing System

- 1) Manual data entry causes various types of discrepancies.
- 2) Possibility of human error
- 3) Manual efforts required

IV. PROPOSED SYSTEM

It is a cross-organizational medical data sharing framework based on permission-based blockchain technology, named “EMRShare”, to resolve the trust concern existing in EMRs sharing practice among different participants like patients, clinicians and researchers, and other relevant parties such as the insurance agent and government, to make medical data sharing and access secure, efficient, transparent, immutable, traceable and auditable. To enhance the Electronic Medical Record (EMR) sharing practice among different participants such as doctors, patients, and researchers. Blockchain primarily based systems have the potential to scale back or eliminate the friction and prices of current intermediaries The fundamental structure of blockchain is a chain of linked blocks, of which any successive block maintains a hash of the previous block that combines with the payload data (and a nonce field if using proof-of-work consensus) to create the hash label of the new block into the chain. Because of the special data structure, illegal modification of any single block leads to the chain structure breakage that can be easily noticed. It has to be noted that the chain based structure itself only rises a bit more overhead while hacking or changing the data content, as thus a blockchain always needs to work inside a distributed network along with certain type of consensus protocols to enable robust data protection and prevent illegal data operations.



- 1) *User Registration*: The user should be registered in the system with face authentication security system
- 2) *CNN*: Convolutional layers of CNN are constructed using the opencv convolution function and the down sampling function. At the same time, the basic principle of multi-layer perception MLP is studied to grasp the full connection layer and classification layer, and the use of the Python library to achieve. This article simplifies the CNN model by layering the convolution and sampling layers together. The model consists of two convolution plus sampling layers, a fully connected layer, and a classification layer. This model is used to train the face data set to optimize the model parameters..
- 3) *DBase Handler*: It is the process of ensuring that research data is stored, archived, or disposed of in a safe and secure manner during and after the conclusion of the research. This includes the event of policies and procedures to manage data handled electronically. Data handling is significant in ensuring the integrity of research data since it addresses concerns related to confidentiality, security, and preservation/retention of research data. Proper planning for data handling also can end in efficient and economical storage, retrieval, and disposal of knowledge . In the case of knowledge handled electronically, data integrity may be a primary concern to make sure that recorded data isn't altered, erased, lost, or accessed by unauthorized users.

V. CONCLUSION

The objective of this project is to develop sharing Electronic Medical Records in various organizations using Blockchain Technology to facilitate medical data sharing efficiently in the healthcare ecosystem. We focus on using permission blockchain technology to facilitate the sharing and management of electronic medical records. The reasoning on how chain code can bring cross-organizational validation and automation of medical data sharing procedure is presented. A cross-organizational EMR sharing framework is proposed and accordingly a prototype system is implemented to demonstrate the key features.

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