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Medical System Verification through Blockchain

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Abstract: *Healthcare systems recently experienced security risks and data problems, thus becoming less trustworthy in processing medical data. Conventional techniques for detecting shared medical records usually impracticable, tied to potential tampering and centralized threats. The paper provides a new idea of medical diagnosis relying on blockchain technology decentralization, unchangeability, and transparency of blockchain offer an answer to enhance trust in medical information and processes. The architecture employs a private blockchain network to capture and handle medical information, yet supports tamper proof and secure sharing between doctors, patients and other concerned stakeholders. Encryption of data, access control and authentication are ensured with the help of cryptography technology and smart contracts.*

Keywords: Blockchain, Medical Information, Decentralized ledger, Smart Contracts

I. INTRODUCTION

Blockchain devices can be employed to build secure distributed, and self-evident healing records. Medical news is safeguarded Expected correct. It forms a distributed, interfered authentication, and secure environment. Blockchain is being directly envisioned to find and fix flaws in health care. Some leaks of news and safety have improved the course in the healing community. In 2019, it was reported that 6.8 heap consumers' healing facts were compromised in India. The mean healthcare rupture resumes an anticipated confusion of $ 7.12 heap in 2019. Many recently arrangements have started to seem savvy regarding the utilization of blockchain in healthcare to be more secure. The Blockchain that was received in 2008 to take care of against assaults on the written dossier is a delivered account book that records undertakings by constructing a shared, immutable structure. Traditional cure is a common exchange that shows the existence of new science and the future. With the healthcare division maintaining an end revolution, it faces significant challenges relating to dossier uprightness safety, and the authenticity of healing brands and specialists. Traditional wholes continuously face challenges such as illegal methods of handling healing records, fake healing provisions, and arduous processes of establishing healthcare references. This project proposes a solution by utilizing blockchain technology, which delineates a distributed and safe account book that cannot be modified. Our objective alongside the blockchain search is to prevent healing records from tampering, ensure legality of healing merchandise, and reduce the proof of healthcare professionals' references.

This groundbreaking system not only enhances protection and transparence but also enables more skilled dossier giving between healthcare providers.

II. LITERATURE SURVEY

Here's a concise overview of each of the papers mentioned, which we can utilise for the literature survey in our project: This design is secured by the utilization of elliptic curve digital signature algorithm and proof-of work as the consensus algorithm.[4]in the future it integrates the hospital directory, electronic medical records and ambulance network. these components will be linked together using a blockchain network, enabling users to find the closest medical care and ambulances in the event of an emergency.[1]. Smart contracts aren't only associated with the enforcement of access control, but also medical data storage, and are thus central to this solution. There are three intelligent con- tracts in total: policy contract (PSC), access control contract (ASC), and medical record contract (RSC). In this paper, IPFS and blockchain are merged to reduce the burden of storage on blockchain, but this is still a transition period, and in the

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future we should look forward to addressing the problem of data storage from the blockchain.[2] Blockchain is merely an immutable distributed database that is shared by a set of nodes on a p2p network. Every action on this network is referred to as a transaction. A series of such transactions is a block. A block is linked with a timestamp, hash value, and previous block hash. This linking of blocks to each other makes the ledger tamper-proof and irreversible. The blocks are added to the network upon validation by the Proof-of-Work consensus or Any other custom consensus algorithm.[3] A blockchain network applied in the health-care system to maintain It can assist in preventing fear of healthcare data manipulation and accommodates a distinct data storage pattern at maximum security. There are creative uses of Blockchain in healthcare owing to intrinsic encryption and decentralization. It improves patients' electronic medical record security, encourages monetization of health data, enhances interoperability among healthcare organizations, and aids counterfeit combat drugs.[4] In this paper it will primarily focus on the zero knowledge proof, where both parties are providing the right information to each other. every node will need to verify the transaction validity and sender exchange the information along with the verification nodes. the transaction between patient and hospital was submitted to distributed consensus through PBFT algorithm[5].

III. METHODOLOGY

1] We create a connection for hospital and patient stores to enable hospital patients and stores to record, access and manage information.2] Create smart contracts between medical stores for monthly medical providers. Create smart con tracts using Solidity Ethereum.3] We check the validity period of the medicine through smart contracts and check whether the medicine comes from authorized personnel. Hospitals and Clinics (Creation of Medical Records).4] Responsibilities: Hospitals and clinics are the source of medical records, which can carry information such as patient medical history and lab oratory results, and other sensitive information. Medical records are stored and must be securely stored and protected.5] Smart Contract: Automatically verify on the blockchain. Such contracts ensure that the data in question meets the specified conditions before being added to the blockchain. appropriate standards for sex. 6] Once the verification is complete, the confirmation will be sent back to the organizations (hospitals, laboratories, doctors).7] Immutable data function: After verification medical data is stored in an immutable form on the blockchain. This step ensures the protection of medical records**.**

IV. EXPERIMENTAL RESULTS

Figure shows the result of Medical System Verification using blockchain. Fig. 1] Serves as the landing page introducing the platform to new users with call-to-action for registration. Fig. 2] Allows different types of users to log in based on their role. The design is user-friendly and role-based. Fig. 3] Provides a patient with an overview of their appointments, doctors consulted, and medical reports. Fig. 4] Lets patients book doctor appointments and submit symptoms. Fig. 5] Verification entities in patient dashboard. Fig. 6] Doctor Dashboard. Fig. 7] Medicine dashboard we can add new medicine in that. Fig. 8] Shows listed medicines with descriptions, prices, and batch IDs. Fig. 9] Allows the admin to add new doctor or medicine provider license details. Fig. 10] Displays registered doctors and medicine providers with their license details.

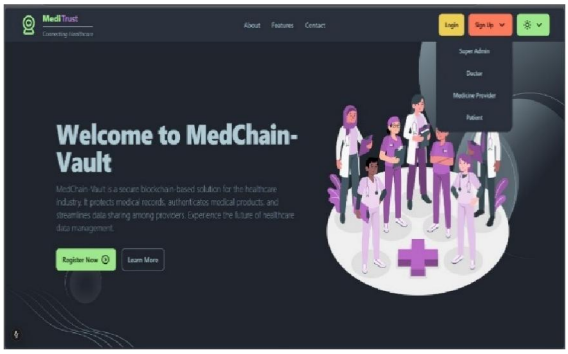

Fig. [1]

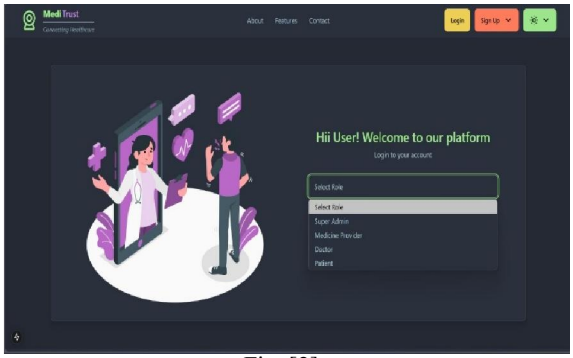

Fig. [2]

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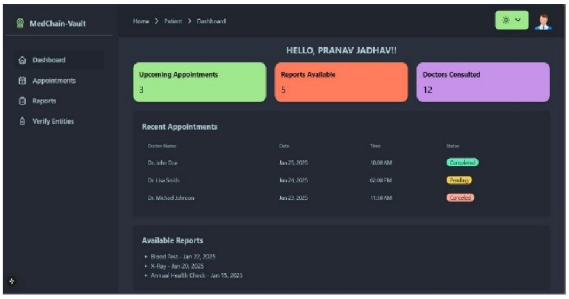

Fig. [3]

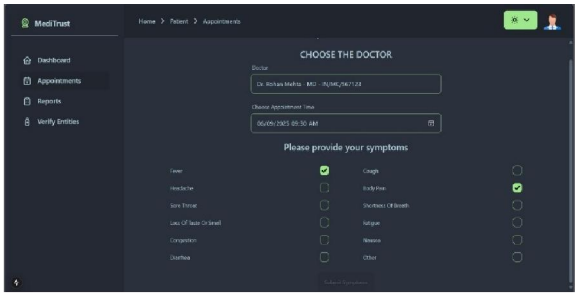

Fig. [4]

Fig. [5]

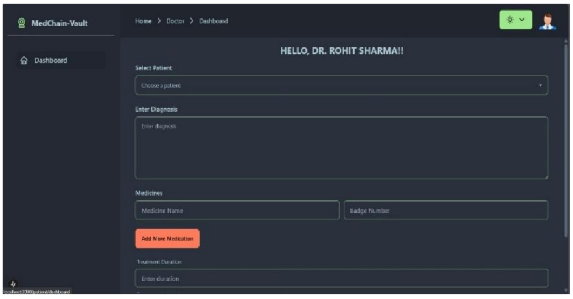

Fig. [6]

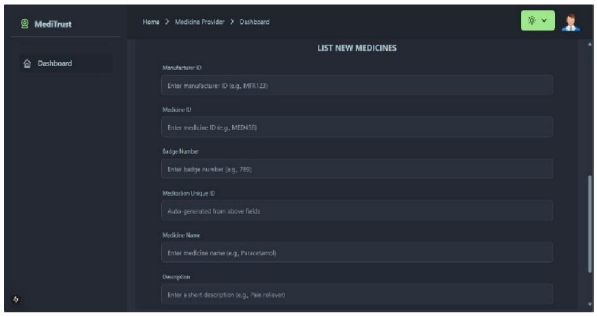

Fig. [7]

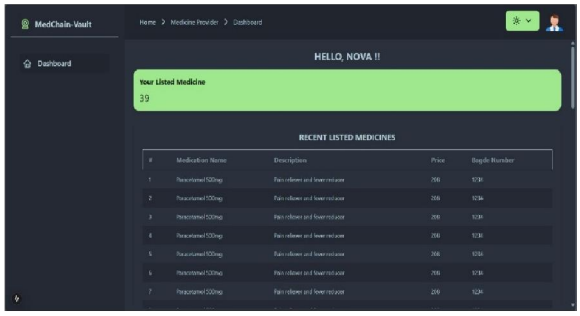

Fig.[8]

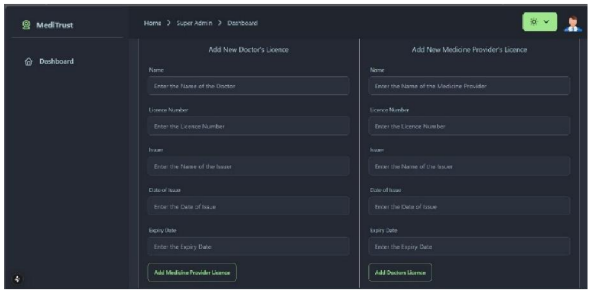

Fig.[9]

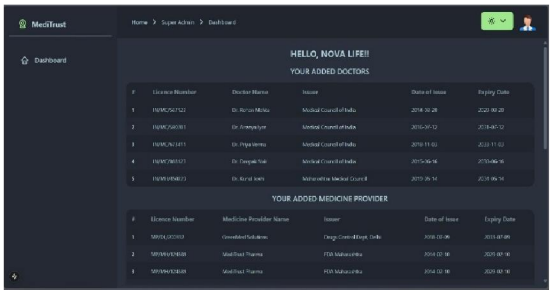

Fig. [10]

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V. CONCLUSION

This system has the potential to revolutionize the healthcare industry by providing a secure transparent and decentralized way to manage medical data and systems. It can increase transparency and accountability in clinical trails ensuring that data is accurate and reliable. Blockchain technology can improve access to healthcare services by providing a platform for patients to access quality medical services remotely.

REFERENCES

[1] Bindu shree K, Rashmi C, Shantala C , Automated Medical Record Authentication and Verification using Blockchain technology :A study [IJFMR, July-August 2024] https://www.ijfmr.com/papers/2024/4/25980.pdf

[2] Sun Zhijie1, Han Dezhi1, Li Dun1,2*, Wang Xiangsheng1, Zhang Qinchen3, and Wu Zhong dai. Blockchain based secure storage scheme for medical information [sun et al. J Wireless ComNetwork,2022] https://jwcneurasipjournals.springeropen.com/articles/10.1186/s136380220216#:~:text=As%20a%20decentralized%20database%2C%20blockchain,the%20immutability%20 of%20the%20data.

[3] Abid Haleem a , Mohd Javaid a,* , Ravi Pratap Singh b , Rajiv Suman c , Shanay Rab d , Blockchain technology applications in healthcare: An overview, [International Journal of Intelligent Networks , 2021] https://www.sciencedirect.com/science/article/pi i/S266660302100021X.

[4] Arindom Chakraborty,pranto kumar ghosh,mehandi hasan-blockchain application in healthcare system: https://www.mdpi.com/2079-8954/11/1/38

[5] Using blockchain for electronic health care record.Shahnaz, A., Qamar, U., & Khalid, A. (2019) https://pureadmin.qub.ac.uk/ws/portalfiles/port al/200784755/ElHealthRec.pdf

[6] Blockchain based medical records system and QR code based medicine validation.-Aluri saibhavana, P E Archana, Vignesh R Poduval, Vinayak anil Pillai, Sanjay S kumar https://ieeexplore.ieee.org/document/10142324 [7] Blockchain-based Interoperable Healthcare Using Zero-knowledge Proofs and Proxy Re- Encryption- Bhavye Sharma, Raju Halder IIT Patna, India, Jawar Singh. https://www.iitp.ac.in/~halder/Papers/Conferen ce/COMSNET_2020.pdf

[8] MedDoc : Secured Medical Document Storing And Exchange Using Blockchain- Pranay Nimsatkar Department Of Computer ,Engineering, Jayawantrao Sawant College Of Engineering,Pune,India, Prathamesh Padalkar,Darshan Pardeshi, Sangram Ranshing,dr. mansi bhonsle. https://www.ijnrd.org/papers/IJNRD2403670.p df

[9] Enhancing health-care security: The role of blockchain and consensus mechanisms- Asmaul Hosna, Nujhat Tabassum, https://accscience.com/journal/AIH/1/2/10.369 22/aih.2580

[10] Haiping huang ,peng zhu ,xiang sun , A blockchain based-Scheme for privacy-preserving and secure sharing of medicaldata,[Elsevier,2020]https://scholar.google.co.in/scholar?q=A+blockchain+based-Scheme+for+privacy preserving+and+secure+sharing+of+medical+da ta&hl=en&as_sdt=0&as_vis=1&oi=scholar