PROJECT REPORT

On

Title:Blockchain to the rescue of medical data

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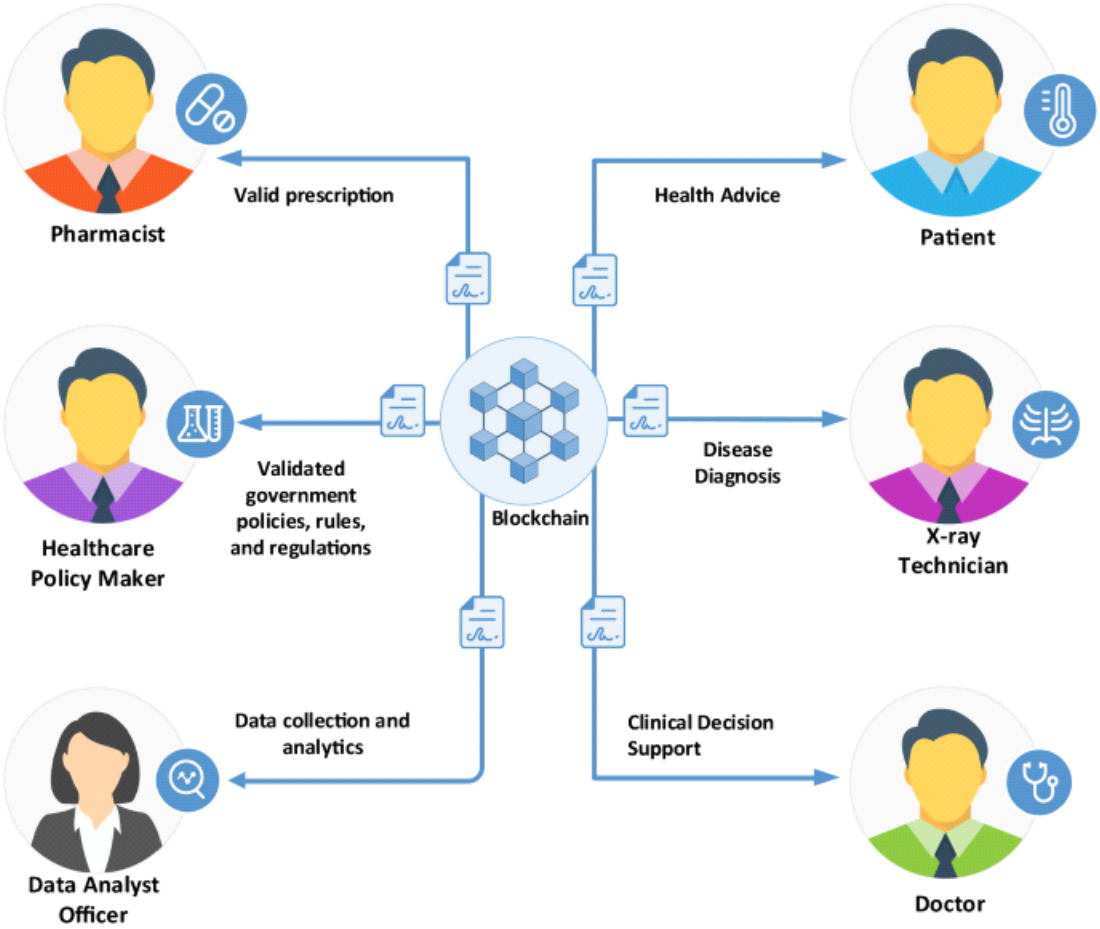
• ABSTRACT

The basic principle of blockchain is decentralisation.Blockchain is a decen- tralised node network that stores the data. It is an excellent technology for protecting confidential data within the system. This technology helps to exchange critical data and keeps it secure and confidential.This technology is helpful to medical institutions to gain insight and enhance the analysis of medical records. In this paper, we studied Blockchain technology and its significant benefits in healthcare. It can help avoid the fear of data manipula- tion in healthcare and supports a unique data storage pattern at the highest level of security. It provides versatility, interconnection, accountability, and authentication for data access. For different purposes, health records must be kept safe and confidential. Blockchain helps for the decentralised protection of data in healthcare and avoids specific threats.

• INTRODUCTION

The urgency of development increases to more incredible speeds. Today the need is for quality health facilities supported by advanced and newer technologies. Here, Blockchain would play a critical role in transforming the healthcare sector. In addition, the landscape of the health system is moving towards a patient-centred approach focusing on two main aspects: accessible services and appropriate healthcare resources at all times. The Blockchain enhances healthcare organisations to provide adequate patient care and high-quality health facilities. Health Information Exchange is an- other time-consuming and repetitive process that leads to high health in- dustry costs, quickly sorted out using this technology. Using Blockchain technology, citizens may take part in health study programs. In addition, better research and shared data on public wellbeing will enhance treatment for different communities. A centralised database is used to manage the en- tire healthcare system and organisations.

Until now, the most significant problems faced are data protection, shar- ing, and interoperability in population health management. This particular problem is reliable by using Blockchain. This technology enhances security, data exchange, interoperability, integrity, and real-time updating and access when correctly implemented. There are also significant concerns about data protection, especially in the fields of personalised medicine and wearables. Patients and medical personnel require safe and straightforward means of recording, sending, and consulting data over networks without safety con- cerns; thus, Blockchain technology is implemented to resolve these issues



- ## BLOCKCHAIN TO THE RESCUE

Applying this technology to telesurgery systems can bring several bene- fits. For example, traditional telesurgery systems are centralised, which makes it difficult for multiple surgeons using different systems to share patient data, without an intermediary being involved. As well as poten- tially causing delays to surgical procedures, the use of an intermediary is an unnecessary security risk. Due to its decentralised functionality, blockchain or distributed ledger technology eliminates the need for an intermediary and enhances the system's overall security.

Store information of an individual patient: Blockchain is based on ex- isting cryptographic techniques, which include the appropriate frame- work for cryptography for data sharing. The patient's name, date of birth and diagnosis, treatments, and ambulatory history are recorded in EHR format during patient details by the healthcare provider. This information is stored in cloud computing or the current databases.

Analyse the effects of a particular procedure: Researchers can effectively analyse any particular procedure on a large part of the patient popu- lation through verified access to the patient data. This produces sig- nificant results that enhance the mode of management of these patient groups. With the Blockchain infrastructure in place, pharmaceutical firms will gather data in real-time to deliver a wide range of precisely adapted prescription drugs or services for patients.

Validation Transactions are validated in a Blockchain until they are linked to the chain and are done by algorithms. The authenticity is sealed until the material is encrypted, digitally signed and saved. Healthcare companies, technological innovators, and the healthcare

Safety and transparency : Blockchain enables various health ecosystem organisations to remain in touch and exchange information on a com- monly distributed leader for better safety and transparency. The users can exchange and monitor their data and other actions in the system without searching for more solutions for integrity and confidentiality when using such a system.

Health record keeping : The connection of all data in the same place will give us new perspectives on a patient's health status. Therefore, the Blockchain paradigm would ensure the information is authentic and legitimate and preserve users' privacy. Clinical Trial In clinical trials, Blockchain Technology is used to address problems of false results and data disintegration that do not match the purposes and objectives of the research. Blockchain will strengthen trust in clinical trials.

There are many more applications of blockchain in healthcare like Dis- play information, Identification of false content, Reduces needless over- head expenses , Patient monitoring, Create research initiatives , Main- tain financial statements in hospitals, Improves safety i.e. Blockchain increases overall safety in the health treatment of patients, addresses medication validity and drug traceability problems, and allows for safe interoperabilityand Minimise data transformation time and cost.

• LIMITATIONS AND FUTURE SCOPES

Blockchain technology is incorporated into the healthcare industry, in which specific challenges would have to be addressed. The big problem with the utilisation of this advanced technology for medical facilities is the lack of expertise. Blockchain applications are still in the early stages and must do more work for technology exploration and research. It, however, applies to medical associations and regulators' obligations. The time has come for the health sector to improve. Blockchain in the field of healthcare is very likely to expand in the future. Its applications in healthcare will improve with this technological innovation as it helps explain the outcomes and progress in the treatment process. Blockchain technology is core to validating transactionsand transfers of information.

In the upcoming days, with the consent of the network members, trans- actions can be authenticated and registered using Blockchain technologies. Blockchain will provide numerical security by public and private key encryp- tion to the patient's level as the foundation of a new generation of health information sharing. This technology promises to treat patient records, in- fringement prevention, interoperability improvement, the rationalisation of procedures, medication and prescription control, and medical and supply chains monitoring. Blockchain in healthcare is seen with a tremendous performance in the future.

• CONCLUSION

There are innovative applications of Blockchain in healthcare due to inher- ent encryption and decentralisation. It enhances the security of patients' electronic medical records, promotes the monetisation of health informa- tion, improves interoperability among healthcare organisations, and helps counterfeit combat medicines. Different healthcare fields can change with Blockchain technology; areas like healthcare, digital agreements allowed by intelligent contracts constitute one of Blockchain's most critical applications. By removing intermediaries from the payment chain, intelligent contracts will minimise costs. The Blockchain potential in healthcare depends significantly on the

adoption of associated advanced technologies in the ecosystem. It includes system tracking, healthcare insurance, medicines tracing, and clin- ical trials. Hospitals can chart their services using a Blockchain framework, even over the entire life cycle, using device tracking. Blockchain technology can well be used to improve patient history management, especially tracking and the insurance mediation process, thereby accelerate clinical actions with optimised data maintenance. Overall, this technology would significantly en- hance and eventually revolutionise how patients and physicians treat and use clinical records and improve healthcare services.

• REFERENCES

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