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Artificial Intelligence Assignment I

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Topic: Data is highly confidential in medical science, hence cannot be shared on public platforms. Elaborate the use of Blockchain and Artificial Intelligence for the security of medical data. Also, share the future opportunities of amalgamation of these technologies in medical science.

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According to HIPPA privacy rule, It states that it is essential to maintain the privacy and importance of health information. Mostly the primarily justification present in the society is about collecting the personally identifiable health information for health research in certain areas. But it is important to focus that privacy also has a value at the society level it is because, it permits complex activities, including research and public health activities to be carried out in ways that protect an individual's dignity.

Confidentiality is one of the most important terms in security that explains about a data being present to stay confidential only between the authorized entities of a system or an organization. Medical data should stay confidential only between the entities responsible and that have authorization.

Protecting the security of data available or collected in healthcare is important since it requires the collection, storage, and use of large amounts of personally identifiable health information which might be sensitive and potentially embarrassing. If security is breached for that data, the individuals whose health information was inappropriately accessed will face some potential harms. The leakage of personal information may cause inherent harm because that private information is known by others. Another potential danger that could possibly happen is economic harm. Individuals could lose their job, health insurance, or housing if the wrong type of information becomes publicly availed knowledge. Individuals could also go through a lot of social or psychological harm. For example, the disclosure that an individual is infected with HIV or another sort of sexually transmitted infection can cause social isolation or other psychologically harmful results. As security breaches could put individuals in danger of identity theft. Hence, the medical data must always be confidential.

Blockchain is a decentralized distributed ledger that stores data, holds immutable property and verifies transactions. It is faster than the centralized network. The ledger can be shared and verified by anyone who has access for eliminating the need of costly third-party verification. It can be said that decentralized health data management will be the backbone from where all the stakeholders can have controlled access to the same health records, without any one playing the role of central authority over the worldwide health data.

The main features of blockchain are:

Decentralization

Immutability

Scalability

Limited privacy

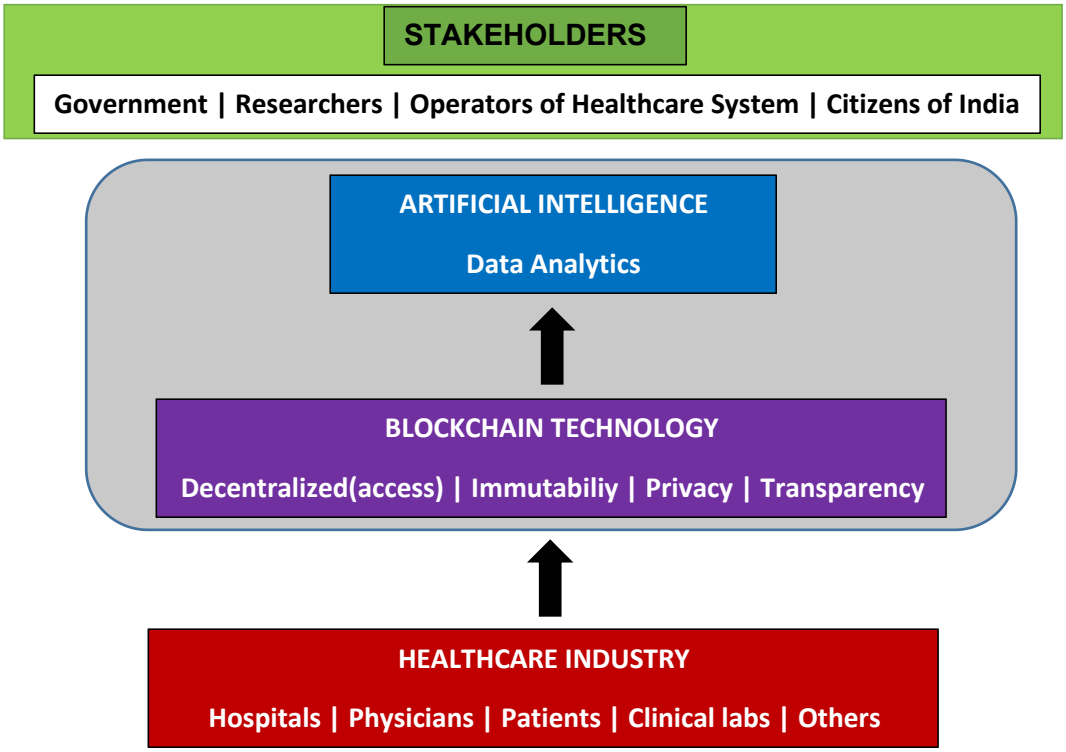
Transparency and Trust

Blockchain technology is to enhance the medical record management system and the insurance process, accelerate clinical and biomedical researches and advance the biomedical and healthcare data ledger. These expectations arise on key aspects of blockchain technology, such as decentralized management, immutable audit trail, data provenance, robustness, and improved security and privacy. The most notable innovation that can be achieved with blockchain technology is the recovery of data subjects. The immutability property of blockchain greatly improves the security of the health data stored on it, since the data, once saved to the blockchain cannot be corrupted, altered or retrieved. Even without accessing the

plaintext of the records stored on blockchain, the integrity and validity of those records can be verified.

Artificial Intelligence (AI) is an important concept in the field of computer science that looks to create complex machines with characteristics of the human intelligence. Many AI techniques known as deep learning and machine learning which have improved performance in areas such as image classification(processing), text analysis, data analytics, speech and facial recognition with a range of applications such as autonomous vehicles, natural language processing, and in medicine ofcourse. AI is composed to play an increasingly eminent role in medicine and healthcare because of its improvements in computing power, learning and understanding algorithms, and the availability of large datasets (known as big data) from medical records and health monitors. The rise of AI in the modern era of big data can assist physicians in improving and understanding the quality of patient care along with to provide radiologists with tools for improving the accuracy and efficiency of diagnosis and treatment. AI is great to handle repetitive work processes, managing large amounts of data, and can provide decision support to mitigate errors.

By combining the latest advancements of these two technologies, AI and Blockchain, the medical industry will have improved quality service, reduced costs, and democratized healthcare within their system. AI needs data and blockchain allows for encrypted data(concepts of data hiding and hashing may be implemented). Blockchain will help to determine the logic present in the algorithmic decision-making processes.
The data from the clinical laboratories, hospitals, primary care physicians, pediatricians, and other sources are shared while respecting privacy and security with blockchain. Analysis of data can be done via AI solutions. This is totally valid for risk management, promotes research into suitable therapies, and fosters for the development of new drugs.



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