Chapter 42
Security and Privacy for Electronic Healthcare Records Using AI in Blockchain

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ABSTRACT

In yesteryears, the healthcare data related to each patient was limited. It was stored and controlled by the hospital authorities and was seldom regulated. With the increase in awareness and technology, the amount of medical data per person has increased exponentially. All this data is essential for the correct diagnosis of the patient. The patients also want access to their data to seek medical advice from different doctors. This raises several challenges like security, privacy, data regulation, etc. As health-related data are privacy-sensitive, the increase in data stored increases the risk of data exposure. Data availability and privacy are essential in healthcare. The availability of correct information is critical for the treatment of the patient. Information not easily accessed by the patients also complicates seeking medical advice from different hospitals. However, if data is easily accessible to everyone, it makes privacy and security difficult. Blockchains to store and secure data will not only ensure data privacy but will also provide a common method of data regulation.

DOI: 10.4018/978-1-6684-7132-6.ch042

INTRODUCTION

Blockchain technology began from Bitcoin, giving stability against failure and cyber assaults. It utilizes technologies, for example, hash chains, digital signatures, and consensus mechanism to record bitcoin exchanges by building dispersed, shared database in decentralized way. Such technologies make interactions secure by providing services like distributed storage, non-repudiation, time-based traceability for exchange substance, which frame a vital framework. Albeit, at first developed for bitcoin, it was later understood that this innovation could also profit in different fields. It was then implemented in different fields, for example, healthcare, fintech, computational law, review, notarization, et cetera by outlining different keen contracts in view of blockchain. This paper includes the way in which blockchain can be used to solve the above-mentioned problem and make electronic healthcare data storage easier and more secure.

As to Bitcoin, (Nakamoto, 2008) Pierro depicts each Bitcoin as a number, and that these numbers are the response for a condition. Each new response for the condition makes another bitcoin and the exhibition of creating an answer is assigned "mining." Once mined, a bitcoin can be traded or exchanged, and each trade produces a segment into the blockchain's activity log. This is regularly suggested as a "record." What makes the blockchain champion is that the record isn't guaranteed or taken care of by one association, yet rather every trade drove has a copy of the focal points of that trade set aside on every PC that was a piece of the trade.

(Ekblaw et. al., 2016) study shows that clinical data is not, at this point restricted to compose news, study of images, and testing blood sample. Genomic information and to facilitate gathered by wearable gadgets, for example, arm bands and watches installed with sensors, are progressively aggregated. Whenever abused viably, the accessibility of the new types of information may prompt superior healing choices and results and might likewise be analyzed by medical coverage organizations offer limits designed for "solid" conduct. Further advantages emerge in the domain of computerized reasoning. (Zhang et. al., 2017) at the point when given the suitable information, this can gather patterns from the information that are then used to produce populace level knowledge, thus accomplish populace wellbeing overall. These new information designs, nonetheless, will require cautious combination to permit suitable examination while keeping up quiet protection and protection from programmers.

(Crosby, 2016) identifies that despite the fact that digitization of wellbeing records has been set up in the overall specialist (GP) area for more than 30 years (though inadequate with regards to fundamental information sharing and trading capacities), optional consideration has not yet effectively accomplished this true norm. Appropriated record innovation, started and exemplified by the bitcoin blockchain, is growingly affecting IT conditions in which compliance to authoritative guidelines and support of open trust is progressively foremost, and it might be utilized in acknowledging digital objective. The point of this survey be to sum up the proof identifying with the execution of blockchain to oversee electronic wellbeing records (EHRs) in addition to examine whether this might get better productivity of record the executives.

(Danbar, 2012) said it is additionally significant that the target of this survey isn't simply to distinguish the utilization or the instances of blockchain based application in medical services, yet in addition to comprehend the constraints and difficulties for the blockchain-based medical care applications just as the momentum patterns regarding the specialized methodologies, strategies, and ideas utilized in building up these applications (defeating the restrictions) in a vision to unwind the territories for prospect examination. Also, this audit covers numerous new equipment that has not been distributed by the hour