


Chapter 6

Blockchain Technology in Healthcare Analytics

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ABSTRACT

Blockchain is an exciting new technology that is being used to provide creative solutions in a number of industries, including the medical field. In the healthcare system, hospitals, labs, pharmacies, and doctors exchange and store patient data via a blockchain connected network. Blockchain-based software can reliably detect serious errors, including potentially harmful ones, in the medical domain. As a result, it can enhance the efficiency, security, and openness of medical data exchange within the healthcare system. Medical facilities can improve their understanding of patient care and obtain valuable insights from the use of this technology. This chapter discusses blockchain technology and its advantages, popular algorithms in blockchain technology, the current issues in medical data maintenance, and blockchain application fields in healthcare. Lastly, the study identifies and discusses the pros and cons of algorithms in medical data maintenance and key benefits of applied fields.

1. INTRODUCTION

Blockchain-based technologies have been added to the cryptocurrency industry to manage transactions and cut down on middlemen. The transaction details were

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sent to several group members with the sender and receiver's information obscured, but the transaction ID was displayed. However, each transaction is recorded across a number of distributed servers, with the participants serving as witnesses. Each blockchain member has a complete copy of the blockchain, which is updated and synchronized continuously as new blocks are added. A node is a device, such as a computer or other electronic device, that provides access to or maintains a copy of the blockchain. Every record in a blockchain is accessible to every member of the blockchain network. Each blockchain member has a complete copy of the blockchain, which is updated and synchronized continuously as new blocks are added. A node is a computer or other gadget that keeps a copy of the blockchain on hand or grants access to it. Every participant in the blockchain network has access to every record in a blockchain. When a user adds a block to the chain, they must enter the transaction's details into a cryptographic hashing process that generates a code (a combination of letters and numbers) exclusive to that transaction (OECD, 2020). The network would be made aware of a potential case of data tampering if any portion of the data block were later changed since the hashing algorithm would generate a different code that would be incompatible with the other codes in that blockchain. Because a successful assault would necessitate breaking into several copies of the distributed ledger to update them all at once, the complexity of altering blocks increases with the number of users in a blockchain network (Miles, 2017).

'Append only' is the structure used by the majority of blockchains. In other words, the blockchain allows for the addition of new data, but once a block has been added, it cannot be changed or removed by any of the users. Each participant's copy of the blockchain is guaranteed to be consistent and legitimate thanks to this "append only" structure, which also enables users to confirm each new block added to the chain. A cryptographic hashing algorithm must be used each time a user adds a block to the chain to save information about the transaction. The sales transaction or medical history are saved as data in blocks of the block chain. Once a block's necessary data have been entered, it is added to the series of earlier blocks and a new block is created for the next data entry.

2. ADVANTAGES OF USING BLOCKCHAIN TECHNOLOGY

Blockchain technology produces several benefits to the society and are listed as follows:

- The digital signature function utilization ensures the fraud less operations. This facility made difficulties to change or corrupt the one individual's data by the others.

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