

A Perspective on Block chain Technology, Its Advancements and Applications

Himanshu Chowdary*

Department of Electrical and Electronic Engineering, Vijay College of Engineering, Hyderabad, India

Introduction

A block chain is a decentralized, peer to peer network that houses a public, distributed database. The system uses block-linked structures and distributed computers to keep track of digital transactions. All blocks must be connected to one another to form the block chain, a chain created by the distributed network and computers. A batch of network transaction data is recorded in each block. A simple way to conceptualize block chain is as a networked, detailed digital ledger of transactions, primarily financial transactions. The invention of the technology led to the creation of the Bitcoin cryptocurrency. Three technological advancements are used in block chain technology: Cryptography, consensus algorithms, and smart contracts [1].

Initially created to control the bitcoin trade, block chain technology has developed into one of the most recent inventions in the modern digital economy. Block chain provides a secure underpinning for the primary industries that drive today's economy, including banking, supply chain, energy, agriculture, and healthcare, thanks to its immutable ledger, self-executing smart contracts, and decentralized network that operates in complete transparency. By making all transactions on the chain transparent, block chain encourages data openness. Block chain also increases legitimacy by doing away with a central authority that would otherwise govern the ledger. The ledger is thus disseminated to each link in the chain. This feature dramatically enhances the security and the data recorded on the chain because any changes to the ledger would require consensus before they could be made.

The cloud offers a single practical platform for data trade and delivers value-added services that aid in the creation of data goods. Centralized clouds, however, also result in privacy and security problems with data storage and search. Therefore, initiatives to provide decentralized storage systems have been implemented to ease these worries. Block chain approaches are widely deployed to ensure data integrity and provide scalability for managing massive data. Smart contracts are used in the remote search to safeguard the accuracy and immutability of search results [2].

Block chain technology safely enables data sharing and ensures that outside parties cannot alter medical records. Despite being

widely used, block chain still has privacy preservation issues. Anyone on the chain can examine and validate the data thanks to the transparency that block chain guarantees for the data. The degree of transparency raises concerns about how block chain can safeguard the confidentiality of the transaction and individual data on the chain. At the same time, block chain is currently a reliable, multi-national mechanism for maintaining records.

Description

Block chain technology advancements increase the visibility of the supply chain and allow the manufacturer to better plan deep-tier finance to increase the supply chain's resilience. Delegate finance gives the intermediary tier-1 supplier influence over the manufacturer; therefore, when tier-2 is not severely capital limited, the inefficiency prevents a win-win situation [3].

Bitcoin transactions were the first to leverage block chain technology. Block chain has developed into a universal technology that supports dispersed business operations in today's sharing economy because of its decentralized character. Block chain uses sophisticated cryptography techniques to protect its data. With strong cryptography, block chain is a safe and secure internet system for online transactions. Digital signatures and the block chain's tamper-proof chain structure both contribute to security. They give the block chain immutability when combined. A transaction's legitimacy and authorization are checked and verified using a digital signature. The transaction will be cryptographically written to the chain once the validation is successful. The transparency feature of block chain is another factor supporting the secure protocol.

The healthcare sector may transform due to block chain and artificial intelligence integration. Although block chain technology and Artificial Intelligence (AI) are both novel ideas, combining them could significantly positively affect healthcare performance. Healthcare organizations can use block chain technology to address some of their fundamental problems with data security, usability, and consistency. Essential factors that may affect the accuracy of analytics are the consistency of the data and its inclusion. By improving them with AI techniques, block chain may make it easier to solve consistency and implementation issues with healthcare data [4].

*Address for Correspondence: Himanshu Chowdary, Department of Electrical and Electronic Engineering, Vijay College of Engineering, Hyderabad, India, E-mail: himans1992@gmail.com

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Currently, updates to the ledger are recorded globally across many nations using block chain technology, particularly in the logistics and supply chain management industries. Although block chain is widely used worldwide, many countries have different privacy laws and standards [5]. Because worldwide governance for block chain technology was not yet established, it was seen as an emergent technology. As providing a tamper resistant environment to store sensitive data is necessary for maintaining privacy, the block chain's constructions offer the fundamental security framework for examining block chain's approaches to protecting privacy on the block chain network.

Conclusion

Better privacy protection and higher performance are the primary advantages of private block chain. The general public cannot access a private block chain. A private block chain has a much smaller number of users than a public block chain. As a result, it takes less time to come to a decision. Furthermore, since there are no arbitrary participants on a private block chain, information is better protected. According to a performance analysis study, private block chain transactions are routinely handled more quickly in terms of throughput and time.

Conflict of Interest

Author has no conflicts.

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