

CONSENSUS ALGORITHMS IN BLOCKCHAIN TECHNOLOGY: A COMPARATIVE STUDY

Satpal Singh*

*Assistant Professor in Computer Science,
University College Chunni Kalan,
INDIA
Email id: spsingh.mohali@gmail.com

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ABSTRACT

Blockchain, nowadays, is a fastest growing distributed and secured technology that can be used in various fields. Bitcoin, that works on the PoW (Proof of Work) Consensus mechanism and commenced its services in 2009, is the most successful crypto currency today. The idea of Blockchain emerged out in 1991 by Stuart Haber and W. Scott Stornetta that a technology can run on a peer to peer network without any centralized authority. However it took almost 18 years to develop first Blockchain based application. In this type of network, each node contains the copy of Blockchain transactions that has been added to the system after validation. Consensus is a general agreement that has to be done between two parties in order to achieve an output. This mechanism guarantees that all the nodes in network are well coordinated and any illegal transaction must not occur in the system. Every Blockchain network uses different Consensus mechanism as per its requirements. In case of Blockchain technology, 51% of the present network nodes need to be agreed according to the contract in order to achieve the consensus. If a malicious node tries to control the network then it needs to gain the faith of 51% of the networks nodes that however is impossible. The main motive of Consensus mechanism is to secure the network and control any unauthorized activity that could be harmful for the network. Miners are the nodes that validate every new transaction that has to be linked in Blockchain. The consensus mechanism verifies that the block added in Blockchain is validated by the miners and a copy of this is distributed among all other nodes. Consensus algorithm becomes the backbone of a Blockchain network as it plays a major role in appending a block in a chain and ensures security. Consensus mechanisms can be differentiated in terms of difficulty level of computation, scalability, throughput, security and efficacy.

KEYWORDS: Consensus, Scalability, Computation, Malicious.

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