Comparative Analysis of Consensus Algorithms in Blockchain

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Abstract: *A blockchain is a decentralized, shared, and public digital ledger that is used to log transactions across many devices so that the record cannot be altered, deleted, or destroyed retroactively without the alteration of all subsequent blocks and the consensus of the network. Blockchain is global and open to all users and is considered completely secured and verified. It is possible only because of the presence of the consensus protocol, which is a core part of any Blockchain network. The consensus algorithm is a strategy that a group of computers uses to agree with each other on what's true, and it is the foundation of all cryptocurrency blockchains. It is used to verify transactions and keep the underlying blockchain secure. There are various types of consensus algorithms in blockchain, each with its own set of benefits and losses. One consensus algorithm cannot meet the needs of all applications. Comparing the available consensus algorithms on a technical level is critical to highlight their strengths, weaknesses, and application scenarios. Major algorithms in use today are PoW, PoS, etc but they suffer from one or other problems directly affecting their performance, security, efficiency, and use. From statistics available for the performance and efficiency of various consensus algorithms it is determined that PBFT showcases various promising characteristics needed from a consensus algorithm. We proposed in this paper implementation to mitigate the scalability problem of PBFT. In this paper, we have identified parameters in various consensus algorithms and determined the best suitable consensus algorithm. This paper will serve as a resource for developers and researchers looking to evaluate and design a consensus algorithm.*

Keywords: Blockchain, Consensus Algorithm, Comparative analysis of consensus algorithms, Hierarchical PBFT

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