

Cover Letter

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Dear Editor,

We wish to submit an original research article entitled “Performance and Scalability Comparison of Raft and SmartBFT consensus mechanisms in a private blockchain network” for consideration by Journal of Control Engineering and Applied Informatics.

We confirm that this work is original and has not been published elsewhere, nor is it currently under consideration for publication elsewhere.

In the paper, we compared two consensus mechanisms, Raft and SmartBFT, in terms of performance and scalability. To our knowledge, this study is the first to compare Raft and SmartBFT consensus algorithms so comprehensively in terms of performance and scalability using the Hyperledger Fabric framework, as SmartBFT has recently been implemented in the framework. It is shown that no best consensus algorithm exists; rather, there is only the most appropriate one for a given scenario. We also present findings that include surprising results in cases where the SmartBFT algorithm performs unexpectedly well. This is significant because the consensus algorithm is one of the key components that affect the performance of blockchain networks.

Additionally, it has been shown that there are cases where SmartBFT, despite having a more complex structure, can outperform Raft in terms of performance and scalability. Thresholds related to scalability and performance were obtained from the results. The consensus mechanism is a crucial factor affecting the performance of blockchain networks. Since the results of such studies guide the selection of optimal platforms and options for blockchain researchers/developers in their work, conducting such performance analyses is significant.

We have no conflicts of interest to disclose.

Please address all correspondence concerning this manuscript to me at ukilic@atu.edu.tr. Thank you for considering this manuscript.

Sincerely,

Dr. Umit Kilic