ACADEMICIA: An International Multidisciplinary Research Journal
ISSN: 2249-7137 Vol. 11, Issue 11, November 2021 SJIF 2021 = 7.492
A peer reviewed journal

BLOCKCHAIN'S CONSENSUS ALGORITHM: A REVIEW

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DOI: 10.5958/2249-7137.2021.02562.3

ABSTRACT

A consensus algorithm is a computer science technique that allows dispersed processes or systems to agree on a single data value. Consensus algorithms are intended to ensure dependability in a network containing many faulty nodes. Bitcoin's foundational technology is blockchain. With bitcoin's rising value and consistent functioning, blockchain is gaining traction in a variety of fields. Decentralization, stability, security, and non-modifiability are all features of blockchain. It has the capability of altering network architecture. The consensus algorithm is critical for preserving blockchain's security and efficiency. The use of the correct algorithm may significantly improve the performance of a blockchain application. We examined the fundamental concepts and features of consensus algorithms in this paper, as well as the performance and application scenarios of several consensus mechanisms. We also provided technical advice on choosing an appropriate consensus algorithm, as well as a summary of blockchain technology's limits and future developments.

KEYWORDS: *Bitcoin, Blockchain, Consensus, Digital Currency, Distributed System.*

REFERENCES

1. Nakamoto S. A. The Bitcoin Whitepaper by Satoshi Nakamoto - Mastering Bitcoin, 2nd Edition [Book]. www.bitcoin.org. 2018.
2. Ghai W, Kumar S, Athavale VA. Using gaussian mixtures on triphone acoustic modelling-based punjabi continuous speech recognition. In: Advances in Intelligent Systems and Computing. 2021.
3. Sharma K, Goswami L. RFID based Smart Railway Pantograph Control in a Different Phase of Power Line. In: Proceedings of the 2nd International Conference on Inventive Research in Computing Applications, ICIRCA 2020. 2020.
4. Walport M. Distributed ledger technology: Beyond block chain. Gov Off Sci. 2015;
5. Spring J. The World Economic Forum. In: Economization Of Education. 2018.
6. Solanki MS, Sharma DKP, Goswami L, Sikka R, Anand V. Automatic Identification of Temples in Digital Images through Scale Invariant Feature Transform. In: 2020 International Conference on Computer Science, Engineering and Applications, ICCSEA 2020. 2020.
7. Xia H, Jia Z, Li X, Ju L, Sha EHM. Trust prediction and trust-based source routing in mobile ad hoc networks. Ad Hoc Networks. 2013;

8. The byzantine generals problem. Dr Dobb's J. 2008;

9. Goel S, Mamta. GA based trip attraction model for DUA. In: 2015 International Conference on Computing for Sustainable Global Development, INDIACom 2015. 2015.

10. Sharda V, Agarwal RP. Analysis of Graphene Nanoribbon (GNR) interconnects with multi-gate device technology for VLSI applications. In: 2015 IEEE UP Section Conference on Electrical Computer and Electronics, UPCON 2015. 2016.

11. Walia A, Singhal N, Sharma AK. A novel e-learning approach to add more cognition to semantic web. In: Proceedings - 2015 IEEE International Conference on Computational Intelligence and Communication Technology, CICT 2015. 2015.

12. Kumar S, Kumar K, Pandey AK. Dynamic Channel Allocation in Mobile Multimedia Networks Using Error Back Propagation and Hopfield Neural Network (EBP-HOP). In: Procedia Computer Science. 2016.

13. Verma KG, Kaushik BK, Singh R. Propagation Delay Variation due to Process Induced Threshold Voltage Variation. In: Communications in Computer and Information Science. 2010.

14. Kishore N, Singh S. Torque ripples control and speed regulation of Permanent magnet Brushless dc Motor Drive using Artificial Neural Network. In: 2014 Recent Advances in Engineering and Computational Sciences, RAECS 2014. 2014.

15. Goel AR, Ranjan A, Wajid M. VLSI architecture and implementation of statistical multiplexer. In: Proceedings of the International Conference on Innovative Applications of Computational Intelligence on Power, Energy and Controls with Their Impact on Humanity, CIPECH 2014. 2014.

16. Rai MK, Khanna R, Sarkar S. Control of tube parameters on SWCNT bundle interconnect delay and power dissipation. Microelectron Int. 2014;

17. Khanna R, Verma S, Biswas R, Singh JB. Implementation of branch delay in Superscalar processors by reducing branch penalties. In: 2010 IEEE 2nd International Advance Computing Conference, IACC 2010. 2010.

18. Kiayias A, Russell A, David B, Oliynykov R, Bentov I, Lee C, et al. PPCoin: Peer-to-Peer Crypto-Currency with Proof-of-Stake. Proc 2016 ACM SIGSAC Conf Comput Commun Secur - CCS'16. 2017;

19. Bitshares. @# Delegated Proof-of-Stake Consensus. bitshares.org. 2017.

20. Leslie Lamport. Paxos Made Simple. ACM SIGACT News. 2003;

21. Ongaro D, Ousterhout J. In Search of an Understandable Consenus Algorithm (Extended Version). Proc USENIX ATC '14. 2014;

22. Nguyen GT, Kim K. A survey about consensus algorithms used in Blockchain. J Inf Process Syst. 2018;

23. Sharma S, Bansal M. Real-time sentiment analysis towards machine learning. Int J Sci Technol Res. 2020;

24. Tyagi VK, Goel R, Singh M, Kumar S. Modeling and analysis of a closed loop supply chain with uncertain lead time in the perspective of inventory management. Int J Sci Technol Res. 2020;

25. Bach LM, Mihaljevic B, Zagar M. Comparative analysis of blockchain consensus algorithms. In: 2018 41st International Convention on Information and Communication Technology, Electronics and Microelectronics, MIPRO 2018 - Proceedings. 2018.