

Journal on Blockchain

Avdhi Pagaria¹, Mandvi Thakur², Prof. Vandana Kate³, Prof. Nidhi Nigam⁴

Students, Department of Computer Science and Information Engineering^{1,2}

Associate Professor, Department of Computer Science and Information Engineering³

Assistant Professor, Department of Computer Science and Information Engineering⁴

Acropolis Institute of Technology and Research, Indore, MP, India

RGPV University, Madhya Pradesh, India

Abstract: *Blockchain is the underlying technology of a number of digital cryptocurrencies. Blockchain is a chain of blocks that store information with digital signatures in a decentralized and distributed network. The features of Blockchain, including decentralization, immutability, transparency and auditability, make transactions more secure and tamper proof. Apart from cryptocurrency, blockchain technology can be used in financial and social services, risk management, healthcare facilities, and so on. A number of research studies focus on the opportunity that blockchain provides in various application domains. This paper presents a comparative study of the tradeoffs of blockchain and also explains the taxonomy and architecture of blockchain, provides a comparison among different consensus mechanisms. In addition, this paper also notes the future scope and highlights the potential of blockchain technology.*

Keywords: Blockchain, Distributed ledger consensus procedures, cryptocurrency, smart contract

REFERENCES

- [1]. T. Aste, P. Tasca, and T. D. Matteo, "Blockchain technologies: The foreseeable impact on society and industry," *Computer*, vol. 50, no. 9, pp. 18–28, Jan. 2017.
- [2]. K. Salah, M. H. U. Rehman, N. Nizamuddin, and A. Al-Fuqaha, "Blockchain for AI: Review and open research challenges," *IEEE Access*, vol. 7, pp. 10127–10149, 2019.
- [3]. S. Nakamoto et al., *Bitcoin: A Peer-to-Peer Electronic Cash System*. Citeseer, 2008. [Online]. Available: <http://bitcoin.org/bitcoin.pdf>
- [4]. A. Litke, D. Anagnostopoulos, and T. Varvarigou, "Blockchains for supply chain management: Architectural elements and challenges towards a global scale deployment," *Logistics*, vol. 3, no. 1, p. 5, Jan. 2019.
- [5]. M. Kouhizadeh and J. Sarkis, "Blockchain practices, potentials, and perspectives in greening supply chains," *Sustainability*, vol. 10, no. 10, p. 3652, Oct. 2018.
- [6]. F. Casino, T. K. Dasaklis, and C. Patsakis, "A systematic literature review of blockchain-based applications: Current status, classification and open issues," *Telematics Inform.*, vol. 36, pp. 55–81, Mar. 2019.
- [7]. J. A. Kroll, I. C. Davey, and E. W. Felten, "The economics of bit coin mining, or bitcoin in the presence of adversaries," in *Proc. WEIS*, Jun. 2013, p. 11.
- [8]. G. Karame, E. Androulaki, and S. Capkun, "Two bitcoins at the price of one? Double-spending attack on fast payments in bitcoin," *IACR Cryptol. ePrint Arch.*, vol. 2012, no. 248, Oct. 2012.
- [9]. M. del Castillo. (2017). Chain is Now Working on Six 'Citi-Sized' Blockchain Networks. [Online]. Available: <https://www.coindesk.com/chainnow-working-six-citi-sized-blockchain-networks>
- [10]. A. Manimuthu, R. V. Sreedharan, R. G. and D. Marwaha, "A literature review on bitcoin: Transformation of crypto currency into a global phenomenon," *IEEE Eng. Manage. Rev.*, vol. 47, no. 1, pp. 28–35, 1st Quart., 2019.
- [11]. Y. Yuan and F.-Y. Wang, "Blockchain and cryptocurrencies: Model, techniques, and applications," *IEEE Trans. Syst. Man, Cybern., Syst.*, vol. 48, no. 9, pp. 1421–1428, Sep. 2018.
- [12]. A. Kosba, A. Miller, E. Shi, Z. Wen, and C. Papamanthou, "Hawk: The blockchain model of cryptography and privacy-preserving smart contracts," in *Proc. IEEE Symp. Secur. Privacy (SP)*, May 2016, pp. 839–858.

- [13]. J. Wang, P. Wu, X. Wang, and W. Shou, “The outlook of blockchain technology for construction engineering management,” *Frontiers Eng. Manage.*, vol. 4, no. 1, pp. 67–75, 2017
- [14]. D. Shrier, W. Wu, and A. Pentland, “Blockchain & infrastructure (identity, data security),” *MassachusettsInst.Technol.*, Cambridge, MA, USA, 2016, vol. 1, no. 3.
- [15]. H. Yu, Z. Yang, and R. O. Sinnott, “Decentralized big data auditing for smart city environments leveraging blockchain technology,” *IEEE Access*, vol. 7, pp. 6288–6296, 2019.
- [16]. Q. Wang, X. Li, and Y. Yu, “Anonymity for bitcoin from secure escrow address,” *IEEE Access*, vol. 6, pp. 12336–12341, 2018.
- [17]. L. Lamport, R. Shostak, and M. Pease, “The Byzantine generals problem,” *ACM Trans. Program. Lang. Syst.*, vol. 4, no. 3, pp. 382–401, Jul. 1982