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Dynamic Secure Access Control and Data Sharing through Blockchain-Enabled Cloud-IoT Environment

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Abstract: *Cloud storage is a Peer-to-peer network in IoT environment where each node provides the storage service to the customer's data. The storage system is based on the blockchain domain where it is completely decentralized. The convergence of Internet of Things (IoT), Cloud Computing, and Blockchain offers a secure, scalable, and decentralized data management approach. However, ensuring granular and dynamic access control remains a significant challenge due to the distributed nature of IoT networks. This paper proposes a Dual Access Control Mechanism (DACM) that combines Role-Based Access Control (RBAC) and Attribute-Based Access Control (ABAC) to provide fine-grained, adaptive, and secure access management for IoT applications. Cloud Computing is utilized for storage and processing, while Blockchain ensures data integrity, decentralization, and tamper-proof access control policies through smart contracts. The proposed Dual Access Control Mechanism (DACM) integrates IoT, Cloud, and Blockchain to enhance security, scalability, and decentralized access management. By leveraging RBAC & ABAC.*

Keywords: Cloud Computing, Blockchain, Smart Contract, Dual Access Control Machanism(DACM), KNN Algorithm, Naïve Bayes Algorithm, Resource Management, Security and Privacy

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