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Proxy Encryption Concept and Implementation for Safe Blockchain-Based IoT Data Sharing

Miss. Sudhatai Vitthal Harale[1] and Prof. Shubhangi S. Mandwale[2]
Department of Artificial Intelligence and Machine Learning[1,2]
Shreeyash College of Engineering & Technology, Chh. Sambhajinagar

Abstract: *As the Internet of Things has developed, one of its most practical uses in cloud computing has been data sharing. Despite the technology's apparent aesthetic appeal, data security remains an issue because to the multitude of problems that can arise from inappropriate data utilisation. We propose a proxy re-encryption technique for secure data exchange in the cloud in this article. With identity-based encryption, data owners can send their encrypted files to a remote server in the cloud, while proxy re-encryption construction grants authorised people access to the files. Because IoT devices have limited resources, an edge device acts as a proxy server to handle computationally intensive tasks. To further improve service quality and optimise network traffic, we employ information-centric networking properties to disperse cached material within the proxy. Furthermore, blockchain—a game-changing technology that permits decentralization in data sharing—is the foundation of our system paradigm. It accomplishes fine-grained data access management and lessens bottlenecks in centralized systems. The results of our scheme's security study and evaluation showcase the feasibility of our approach to ensuring the safety, privacy, and accuracy of data.*

Keywords: Internet of Things, Cloud Computing, Data Security, Proxy Re-Encryption, Identity-Based Encryption, Edge Computing.

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