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Author

Dipanjana Biswas , Jui Pattnayak , Annwasha Banerjee , Puja Mukherjee, Ankita Basak

Abstract

Today's interconnected world has transformed the operational way of individuals, organizations, and governments by rapid digitization. Starting from online banking and e-commerce to cloud computing and smart devices, digital platforms have become an integral part of daily life. While this transformation offers incredible convenience, efficiency, and accessibility, a wide range of security challenges has also been initiated. There is a high requirement of effective security measures. This study proposed a novel approach to enhance data security using a combination of dynamic key management (DKM) and partial homomorphic encryption (PHE). Achieving optimal security, efficiency, and flexibility in traditional encryption methods is a critical issue. The proposed method supports secure and efficient key updates without decrypting