Blockchain Technology in Decentralized Energy Systems

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Abstract. This study explores the integration of blockchain technology in decentralized energy systems. By facilitating transparent and secure energy transactions, blockchain can enhance system efficiency and reliability. The research highlights the potential of blockchain to transform energy distribution networks, enabling peer-to-peer energy trading and reducing dependency on centralized authorities, thereby fostering a more sustainable energy ecosystem.

Keywords: blockchain technology, decentralized energy, peer-to-peer trading, energy systems, sustainability

Introduction

Decentralized energy systems are pivotal in the transition towards sustainable energy solutions. However, managing these systems efficiently poses significant challenges. Blockchain technology offers a promising solution by enabling secure and transparent transactions within energy networks. This paper investigates the role of blockchain in optimizing decentralized energy systems, focusing on peer-to-peer energy trading and enhanced network reliability. By reducing reliance on centralized authorities, blockchain fosters a more resilient and sustainable energy ecosystem. This research underscores the transformative potential of blockchain in facilitating the efficient distribution and management of energy resources, paving the way for innovative energy strategies and solutions.

References

1. Kumar, N., & Kataria, V. Enhanced Sentiment Classification using a Multi-layered Stacked Ensemble Architecture.
2. Рагимов, Э. Р. О. (2011). Метрология элементов безопасности программных комплексов, реализующих систему защиты информации корпоративных сетей. Вопросы защиты информации, (2), 36-41.