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(57) Abstract :
The present invention relates to an IoT-based smart energy management system that leverages distributed ledger technology (DLT) to optimize energy consumption, enhance data security, and promote sustainable energy practices. This system comprises a network of IoT sensors and smart meters that monitor real-time energy usage across residential, commercial, and industrial settings. The DLT platform securely records energy consumption data, enabling transparency and facilitating peer-to-peer energy trading among users. Advanced analytics algorithms provide personalized recommendations for energy efficiency, while features such as demand response management and renewable energy integration empower users to actively participate in energy conservation efforts. The system enhances user engagement through an intuitive interface that offers insights into consumption patterns, alerts for unusual usage, and automated optimization based on user preferences and external conditions. By promoting decentralized energy management

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