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Deep Learning Solutions for Renewable Energy Optimization in Urban Smart City Frameworks

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Abstract:

Urban smart city frameworks increasingly rely on renewable energy systems to promote sustainability and reduce carbon emissions. This study investigates the application of deep learning models to optimize the management and integration of renewable energy sources, such as solar and wind power, within smart city infrastructures. By analyzing large-scale real-time data from IoT-enabled energy grids, deep learning algorithms can predict energy demand, optimize energy storage, and enhance load balancing. The proposed approach improves energy efficiency, reduces reliance on non-renewable sources, and supports dynamic decision-making in urban energy management. The findings highlight the potential of AI-driven models to revolutionize energy sustainability in smart urban environments.

Keywords:

Smart city, deep learning, renewable energy, energy optimization, IoT, urban sustainability.

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