

Deep Learning Applications in IoT-Based Renewable Energy and Smart Cities Frameworks

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Abstract:

The integration of deep learning (DL) with Internet of Things (IoT) technologies in renewable energy and smart city frameworks is transforming urban infrastructure by enabling intelligent, data-driven energy management. DL algorithms such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs) are used to analyze sensor data for accurate energy demand forecasting, system optimization, and fault detection. Furthermore, deep reinforcement learning (DRL) is employed to implement adaptive control strategies for smart grids, enhancing energy distribution and minimizing wastage. These technologies support the efficient integration of renewable energy sources into urban energy systems, fostering sustainable and resilient smart cities.

Keywords: Deep Learning, Internet of Things, Renewable Energy, Smart Cities, Energy Management, Sustainable Development

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