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Optimization of Smart Cities CO_2 Reduction Through Machine Learning-Based Renewable Energy Algorithms

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Abstract:

Reducing CO_2 emissions in urban environments is essential for combating climate change and promoting sustainability. This study proposes an optimization approach for smart cities by integrating machine learning algorithms with renewable energy systems to reduce CO_2 emissions. The system utilizes real-time data from IoT sensors to monitor energy consumption and CO_2 levels across various urban sectors. Machine learning models, such as regression analysis and deep learning algorithms, are applied to optimize the deployment of renewable energy sources, including solar, wind, and biomass, to minimize emissions. The optimization process involves smart grid management and demand-response strategies to balance energy supply and demand efficiently. Results demonstrate that the proposed approach significantly reduces CO_2 emissions while enhancing the overall energy efficiency of smart cities, offering a scalable solution for sustainable urban development.

Keywords:

Smart cities, CO_2 reduction, machine learning, renewable energy, optimization, sustainability.

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