

Sustainable Geo-Information Systems Optimization Using Deep Learning for Climate Change Mitigation Solutions

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Abstract:

Geo-information systems (GIS) play a pivotal role in analyzing environmental patterns and supporting decision-making in climate change mitigation strategies. This study proposes a deep learning-based optimization framework to enhance the sustainability and efficiency of GIS applications in environmental monitoring and planning. Leveraging satellite imagery, spatial-temporal datasets, and environmental indicators, convolutional neural networks (CNNs) and recurrent neural networks (RNNs) are utilized to model complex climatic phenomena and predict trends such as temperature fluctuations, land-use changes, and greenhouse gas emissions. The integration of deep learning enables high-resolution analysis, automated feature extraction, and adaptive forecasting in dynamic geospatial environments. Results demonstrate improved accuracy in climate risk assessment and resource allocation, offering a data-driven foundation for sustainable development and policy formulation.

Keywords:

Geo-information systems, deep learning, climate change, sustainability, environmental monitoring, spatial analysis.

REQUEST FOR FULL TEXT

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