Journal of Computer Science and Information Systems,

ISSN 2535-1451

Advanced Neural Networks for Air Quality Optimization in Urban Smart City Networks

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Abstract:

Air pollution in urban environments presents a significant threat to public health and environmental sustainability. This study explores the application of advanced neural network architectures for real-time air quality monitoring and optimization within smart city frameworks. By integrating Internet of Things (IoT) sensors and deep learning models, the proposed system enables accurate prediction and classification of key pollutants such as PM2.5, NO_2, and CO. The neural networks are trained on multi-source environmental data, allowing for adaptive forecasting and intelligent decision-making in urban planning and traffic regulation. The system demonstrates high predictive accuracy and robustness across diverse urban conditions, offering a scalable solution for environmental management and public health protection in smart cities.

Keywords:

Air quality, neural networks, smart cities, IoT, deep learning, environmental monitoring.

ISSN 2535-1451

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