A Conv-Long Short-term Memory Deep Learning Model for Traffic Flow Prediction

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Abstract : Traffic congestion has become a severe worldwide problem, affecting everyday life, fuel consumption, time, and air pollution. The primary causes of these issues are inadequate transportation infrastructure, poor traffic signal management, and rising population. Traffic flow forecasting is one of the essential and effective methods in urban congestion and traffic management, which has attracted the attention of researchers. With the development of technology, undeniable progress has been achieved in existing methods. However, there is a possibility of improvement in the extraction of temporal and spatial features to determine the importance of traffic flow sequences and extraction features. In the proposed model, we implement the convolutional neural network (CNN) and long short-term memory (LSTM) deep learning models for mining nonlinear correlations and their effectiveness in increasing the accuracy of traffic flow prediction in the real dataset. According to the experiments, the results indicate that implementing Conv-LSTM networks increases the productivity and accuracy of deep learning models for traffic flow prediction.

Keywords : deep learning algorithms, intelligent transportation systems, spatiotemporal features, traffic flow prediction

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