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Research on Air pollution Spatiotemporal Forecast Model Based on LSTM

Authors : JingWei Yu, Hong Yang Yu

Abstract : At present, the increasingly serious air pollution in various cities of China has made people pay more attention to the air quality index(hereinafter referred to as AQI) of their living areas. To face this situation, it is of great significance to predict air pollution in heavily polluted areas. In this paper, based on the time series model of LSTM, a spatiotemporal prediction model of PM2.5 concentration in Mianyang, Sichuan Province, is established. The model fully considers the temporal variability and spatial distribution characteristics of PM2.5 concentration. The spatial correlation of air quality at different locations is based on the Air quality status of other nearby monitoring stations, including AQI and meteorological data to predict the air quality of a monitoring station. The experimental results show that the method has good prediction accuracy that the fitting degree with the actual measured data reaches more than 0.7, which can be applied to the modeling and prediction of the spatial and temporal distribution of regional PM2.5 concentration.

Keywords : LSTM, PM2.5, neural networks, spatio-temporal prediction
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