

TRAFFIC MANAGEMENT SYSTEM USING AIR QUALITY INDEX

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Abstract

In the current world, air pollution becomes the most serious problem for all life forms and the whole ecosystem. The effect of air pollution varies from respirational infection to global warming. According to WHO statistical records, seven million humans die worldwide each year due to the air pollution. Road traffic constitutes a significant amount of air pollution in the urban cities and the increased number of vehicles became a threat to maintain the traffic. This research provides a way to reduce air pollution through the process of controlling the traffic in certain places. For this investigation, three different places have been chosen such as hospitals, schools, and normal areas. This research has 2 modules as follows: i) predict the air quality health index (AQHI) and predict the health level of AQHI and ii) find the optimized route. In this work, we have used two models to predict the AQHI and AQHI level using Artificial Neural Network (ANN) and Random Forest Regression (RFR) where ANN comparatively performed better than the RFR. According to the acquired accuracy, the traffic management system is implemented using the ANN, and Decision Tree is used to find the optimized route to travel.

Keywords: Air pollution, traffic management, air quality health index, artificial neural network, air quality, random forest regression, decision tree