

Abstract: Prediction Model of Vehicle Fuel Consumption Using Artificial Neural Networks

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Abstract

This paper presented neural network modeling method using vehicle data to predict fuel consumption. The proposed system is constituted of three parts: information acquisition system, fuel consumption forecasting algorithm and performance evaluation. To acquire data for training and testing the artificial neural network with back-propagation, medium-class gasoline vehicle drove at downtown and parameters measured include speed, engine rpm, throttle position sensor (TPS), and mass air flow (MAF) as input data, and fuel consumption as target data from OBD-II port. Multi layer perception network was used for nonlinear mapping between the input and the output data. It was observed that the neural network model can predict the vehicle quite well with mean squared error was 1.306×10^{-6} for the fuel consumption. The prediction results demonstrated that the proposed system using neural network is effective and the performance is satisfactory in fuel consumption prediction.

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