**Trip Based Modeling of Fuel Consumption in Modern Heavy-Duty Vehicles Using Artificial Intelligence**

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**Summary :**

Predicting fuel consumption per trip based on dynamic on-road data can help the automotive industry to reduce the cost and time for on-road testing. Data modeling can easily help to diagnose the reason behind fuel consumption with a knowledge of input parameters. In this paper, an artificial neural network (ANN) was implemented to model fuel consumption in modern heavy-duty trucks for predicting the total and instantaneous fuel consumption of a trip based on very few key parameters, such as engine load (%), engine speed (rpm), and vehicle speed (km/h). Instantaneous fuel consumption data can help to predict patterns in fuel consumption for optimized fleet operations.

**Merits:**

* Neural network models can implicitly detect complex non-linear relationship between independent and dependent variables.
* Neural networks can be developed using multiple different training algorithms

**Demerits:**

* Neural network models may be more difficult to use in the field.
* Neural network modelling require greater computational resources