Vehicle Performance Analysis using Machine Learning

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LITERATURE SURVEY:

TITLE	AUTHOR	ALGORITHM	ADVANTAGES	DISADVANTAGES
VEHICLE PERFORMANCE ANALYZER BASED ON DEEP LEARNING AND LEVENBERG-MARQUART ALGORITHM	Daniel A.Roberts and Sho Yaida,Nikhil Buduma,Nithi Buduma, Joe papa and Nicholas Locascio.	Deep Learning	Integrating a GPS tracking device is beneficial to reduce the overhead cost as it prevents the consumption of fuel, unnecessary overtime expenses, and unauthorized vehicle usage. The tracking system helps you to monitor the activities of drivers more efficiently.	GPS receivers rely on signals from at least four satellites. If they only connect with three, the positioning is not entirely accurate. When obstacles such as walls, buildings, skyscrapers, and trees obstruct a signal, problems can arise.

VEHICLE PERFORMANCE ANALYSIS USING MACHINE LEARNING ALGORITHM (XGBOOST)	Oliver Theobald,Andriy Burkov,Chip Huyen,Robert Munro	Machine Learning	Different ML algorithms to predict if a Vehicle performance will be good or bad. So, it will not be aiming to get the highest accuracy possible, because it would be quite easy by adding a series of features that will bias the model in terms of predictive power. So, this information was looked at as part of the Exploratory Data Analysis (EDA).	The authors compare various machine learning algorithms to predict vehicle performance, but failed to consider simple neural networks and decision tree classifiers. So simple machine learning algorithms like decision tree and simple neural networks to be implemented to predict vehicle performance, and investigate if we can predict vehicle performance with fewer feature-set accurately.

BIG DATA IN VEHICLE PERFORMANCE ANALYZER PREDICTION FOR MAINTAINING DATABASE OF THE ENGINE'S PERFORMANCE OF VEHICLES.	Nathan Marz, James Warren,V.K.Jain, Tony Guida	Big Data	The data source and pre-processing steps including the data merging and cleansing will be introduced. As each dataset is untidy with messy redundant records and missing values. Using forward type vehicle simulation,It aims at comparing the potential and limitations of front wheel drive and rear wheel drive electric motor placements for regenerative braking under extreme driving situations.	Data is thoroughly examined for integrity criteria as well. Since expected model is to work with all the forms like offline, near line and online data, the irrelevant and unnecessary parameters that could overburden the dataset is reduced. Dropped the null values and assigned zero to Not a Number (NaN) values as one of the data cleansing activities. The data types of time factors such as scheduled time, motion time etc., are found to be in float point and proper conversion of input time to standard date time format. Finally, the data is analysed for distribution, converting and pre-processing. Then different datasets such the horse power, engine size, mileage and etc., are integrated and normalized to identify the correlating factors that affect the vehicle performance.

PREDICTION OF THE VEHICLE'S PERFORMANCE USING DATA MINING.	Shantanu Pardhi, Ajinkya Deshmukh, Hugo Ajrouche	Data Mining	First, the considered dynamic/data-driven modelling approach for the complete traction chain with attention to the effects of detailed vehicle dynamics has been implemented in MATLAB Simulink. Simple parallel regenerative braking technique and recuperation favouring brake distribution strategies have been employed on a performance electric car considering front and rear wheel propulsion cases. Powertrain behaviour in a dynamic driving scenario has been investigated to understand how the two cases with the corresponding recuperation favouring braking strategies perform under elevated transient vehicle dynamics. Finally, the impact of normal load transfer, tyre slip and wheel adhesion limits on regenerative braking has been quantitatively compared for the complete range of brake pedal demands using high-speed braking tests while avoiding wheel lock-up.	Data collected are vehicles performance is stored in a warehouse will be updated only at certain points in time. In this way, there is a trade-off exists between the correctness of data and the substantial effort required to bring the data into the warehouse. Data warehouses of vehicle performance also provide a great deal of opportunities for performing data mining tasks such as classification and summarization. Updates are collected and applied to the data warehouse periodically. Then, all patterns derived from the warehouse by some data mining algorithm have to be updated as well.