Regression analysis of new energy battery weight

Is a linear regression model better than a power consumption model?
It should be noted that while the proposed linear regression equation yields a higher error rate than estimating the EV range using a power consumption model in the literature (8.6% vs. approximately 1%),it requires significantly fewer parameters.

Is a power-based eV energy consumption model accurate?
Nonetheless,an accurate power-based EV energy consumption model is crucial to obtain a precise range estimation. This paper describes a study on EV energy consumption modelling. For this purpose,EV modelling is carried out using MATLAB/Simulink software based on a real EV in the market,the BMW i3.

How accurate are eV energy consumption estimation models?
However,this approach is not accuratesince it does not consider the changes in driving conditions that may occur. 10 EV energy consumption estimation models can be classified in three main categories: Analytical,Statistical and Computational models. 7

How to calculate Econs based on battery power output PBAT 29?
The consumed energy,Econs,is calculated as per unit of distance (Wh/m)derived from the battery power output Pbat 29: Pb - out and Pb - in are respectively the power provided by the battery for vehicle motion and the power regenerated to charge the battery considering electric motor braking capabilities in generator mode.

What is EV range estimation?
For EV range estimation,an accurate estimation of the EV's energy consumptionis vital and is therefore the purpose of this study. In this study,the energy flow is only considered inside the vehicle so,the energy flow between the grid and vehicle is out of the framework. Generally,the EV energy consumption refers to the sum of:

What are the parameters of a battery model?
The model consists of an internal voltage source (VOC),an ohmic resistance (RO) and polarisation resistance (R1) and capacitance (C1). The model parameters VOC,RO,R1 and C1are defined as a function of the battery SoC.

Based on this, this paper uses the visualization method to preprocess, clean, and parse collected original battery data (hexadecimal), followed by visualization and analysis ...

Strong correlations were observed between range and battery capacity, top speed, curb weight, and acceleration (with Pearson coefficients of 0.90, 0.79, 0.70, and -0.84, respectively). ... Regression analysis is a simple ...

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According to the traffic conditions and ambient temperature, the actual operation data of 19 battery electric buses in one year are divided into 12 control groups and the ...

Comparison of battery technologies for new energy vehicles. ... Traditional cars will upgrade to light weight, energy saving . ... regression analysis.

Principal component analysis, Bayes regularization BP neural network, sensitivity analysis and multilayer linear regression are used to analyze data from 476 valid questionnaires, the results ...

State of charge (SOC) and state of energy (SOE) are the key factors that reflect the safe and range driving of new energy vehicles. This paper proposes an optimized ...

For this purpose, regression models that consider both EV dynamic behaviour and powertrain efficiency, have been developed. 14-16 For example, the model developed in ...

Regression analysis is used for mathematical formulations while Deep Sleep Heuristic algorithms in MATLAB environment is used for the optimization process for BESS ...

A detailed dataset of the technical specifications of commercial EV models manufactured from 2008 to 2021 was collected through web mining. Strong correlations were observed between range and battery capacity, top ...

As of June 2019, the number of new energy vehicles in China has reached about 3.44 million, and the number of pure electric vehicles has reached 2.81 million, ...

In order to alleviate the pressures of environmental pollution and the energy crisis, and to lay out and capture huge emerging markets as soon as possible, all countries in ...

battery management system operation for optimal utilization of a battery pack in various operating conditions. This article proposes an approach to estimate battery capacity ...

The primary objective of this work is to develop a more versatile machine learning model (i.e., support vector regression [SVR]) capable of estimating battery capacity under fast ...

battery management system operation for optimal utilization of a battery pack in various operating conditions. This article proposes an approach to estimate battery capacity based on two...

energy consumption estimation or energy consumption prediction over a trip for eco-route planning.13 The existing regenerative braking models are improved in this study by ...

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Assessing and predicting the SOH of lithium batteries can help us understand the changes in battery performance, timely detect potential faults, take measures to extend the ...

In this paper, the energy consumption of battery (EC b), motor (EC m), and auxiliaries (EC a) as well as the energy restored to battery during braking energy regeneration ...

The battery is one of the primary energy sources for a green and clean mode of transportation, but variations in driving profiles (NYCC, Artemis Urban, WLTP class-1) and ...

State of charge (SOC) and state of energy (SOE) are the key factors that ...

A detailed dataset of the technical specifications of commercial EV models manufactured from 2008 to 2021 was collected through web mining. Strong correlations were ...

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