New energy battery power loss detection method

Can STL decomposition solve battery cell anomaly detection?
Conversely, the STL decomposition algorithm can tackle this specific issue, making it advantageous for performing battery cell anomaly detection. To the best of our knowledge, the STL algorithm is presented for the first time in the field of fault detection of the lithium-ion battery. 3.3. Manhattan Distance Calculation

Can a battery cell anomaly detection method prevent safety accidents?
Therefore,timely and accurate detection of abnormal monomers can prevent safety accidentsand reduce property losses. In this paper,a battery cell anomaly detection method is proposed based on time series decomposition and an improved Manhattan distance algorithm for actual operating data of electric vehicles.

Why do we process trend components of battery voltage in the experiment?
In vehicle #C2,we process the trend components of battery voltage in the experiment to detect abnormal monomers more accurately. This is necessary because there is a certain voltage difference between one part of the battery cells and another part of the battery cells from the beginning of sampling.

What are the measurable parameters of new energy vehicle batteries?
Table 1. Parameters on the Three Vehicles The measurable parameters of new energy vehicle batteries mainly include voltage,current,and temperature,which are commonly used feature data in battery anomaly detection.

What is a model based fault detection method?
Xiong et al. (33) proposed a model-based fault detection method for current and voltage sensors. The state of charge (SOC) of the battery was estimated using a combination of least-squares recursion and unscented Kalman filtering, and the actual SOC was calculated using the Coulomb counting method.

Why is voltage anomaly important in battery anomaly detection?
Many existing studies have shown that when there are various abnormal faults in the battery, the voltage of the battery exhibits more pronounced fluctuations compared to other data during abnormal conditions. Therefore, voltage anomaly is an extremely important fault indicator in battery anomaly detection.

We conduct a comprehensive study on a new task named power battery detection (PBD), which aims to localize the dense cathode and anode plates endpoints from X-ray images to evaluate the quality of power batteries. Existing manufacturers usually rely on human eye observation to complete PBD, which makes it difficult to balance the

This paper proposes a novel network structure for power battery anomaly detection based on an improved TimesNet. Firstly, the original battery data undergo preprocessing, and the feature correlation coefficient matrix is established using the MIC algorithm. Secondly, the improved TimesNet network is employed to

convert the one ...

Therefore, the fault diagnosis model based on WOA-LSTM algorithm proposed in the study can improve the safety of the power battery of new energy battery vehicles and reduce the probability of safety accidents during the driving process of new energy vehicles.

In this study, a novel data-driven framework for abnormality detection is developed through establishment of a neural network with interpretable modules on top of an Autoencoder using data from real EVs to recognize abnormality while charging.

A novel battery abnormality detection method ... The widespread of EVs is partially attributed to technological progress of lithium-ion batteries in energy density, self-discharge rate, and service life. To achieve required demands of power and driving range, hundreds of battery cells are interconnected in parallel-series configurations and work ...

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Health monitoring and abnormality detection of power batteries for new energy vehicles has been one of the hot topics in recent years. Accurate and efficient power battery anomaly detection is crucial to ensure stable operation of the battery system and energy saving.

A more detailed overview of different methods for detecting lithium plating is given by Janakiraman et al. [28]. As the method presented in this paper is based on the work by Koleti et al. [25] it ...

Deep learning, meanwhile, offers a new technical avenue for power system analysis, as demonstrated by the fault analysis of the power system by Hong et al. and the power loss detection by Khattak ...

With the construction of new power systems, lithium(Li)-ion batteries are essential for storing renewable energy and improving overall grid security 1,2,3.Li-ion batteries, as a type of new energy ...

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To describe the cross-superposition of various faults during lithium-ion battery operation, a new hybrid fault coding method is proposed. This method uses chromosome coding in a genetic algorithm to unify different fault scenarios. The design of the hybrid fault coding is shown in Fig. 2. The hybrid code consists of M digits, incorporating both A-type and B-type codes. The A-type ...

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As the main component of the new energy battery, the safety vent usually is welded on the battery plate, which can prevent unpredictable explosion accidents caused by the increasing internal pressure of the battery. The welding quality of safety vent directly affects the safety and stability of the battery; so, the welding-defect detection is of great significance. In ...

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