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Abstract:

The invention relates to a cloud-based machine learning platform designed for predictive battery analytics in electric vehicles. The platform integrates Internet of Thin data collection, machine learning for predictive analytics, and cloud computing for scalable real-time processing. Data from in-vehicle sensors, external charging stati environmental factors is collected and processed to train machine learning models. These models predict various aspects of battery performance and lifespan. The p delivers detailed analytics reports on battery health, estimated lifespan, performance, and energy consumption, enabling preventive maintenance and optimized ene consumption. This invention represents a comprehensive solution for managing and predicting electric vehicle battery performance in real time.

Complete Specification

Description:The present invention relates generally to the field of predictive analytics and, more specifically, to a cloud-based machine learning platform designed fo predictive battery analytics in electric vehicles. This invention leverages advanced machine learning algorithms, telematics data, cloud computing, and Internet of Th (IoT) technologies to anticipate, analyze, and optimize the battery performance, lifespan, and energy consumption in electric vehicles. It provides a unique solution monitoring, managing, and predicting the behavior of electric vehicle batteries in real-time and over time, thus contributing to the enhancement of the efficiency, re and sustainability of electric vehicle operations.

Background of the invention:

The ongoing global transition to sustainable and clean energy sources has positioned electric vehicles (EVs) at the forefront of transportation evolution. An integral component of this modern transportation paradigm, the battery system of an EV, represents a critical determinant of vehicle performance, reliability, range, and ov user experience. However, the lifespan and performance of these battery systems are impacted by numerous factors including charging habits, climate conditions, behaviors, and battery chemistry, among others. Therefore, a precise, real-time, and predictive understanding of battery health and efficiency is essential for EV ow fleet operators, and manufacturers alike.

Traditionally, monitoring and predicting battery health and performance have been challenging due to the complex and dynamic nature of batteries. The conventio methods primarily rely on simple rule-based algorithms, standard telematics, and diagnostic trouble codes (DTCs) to predict battery failures, often providing limited inaccurate, or delayed insights. In addition, these traditional systems may fail to consider various influencing factors, such as driver behavior or environmental cond thereby limiting their predictive accuracy.

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