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(57) Abstract :
Accordingly, embodiments herein disclose an advanced battery management system (ABMS) for electric vehicles (EVs) that incorporates intelligent algorithms and real-time monitoring to optimize battery performance, extend battery life, and enhance the overall efficiency of electric vehicle power systems. The advanced battery management system comprises a battery sensor for collecting battery data. The battery data allows deep learning-based detection and the classification of faulty battery sensor and transmission information. Further, the proposed ABMS may include a z-score normalization means is designed to pre-process the collected battery data from the battery sensor. Furthermore, the proposed ABMS may include a sparse principal component analysis (SPCA), and enhanced marine predators algorithm (EMPA) designed for feature selection of extracted battery data. The ABMS's safety and dependability can be enhanced by a suggested incipient bat-optimized deep residual network (IB-DRN)-based false battery data identification and classification system.

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