# Solar Operated Battery Management System using IoT

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***Abstract:*** *Electric vehicles are set to be the dominant form of transportation in the near future and Lithium-based rechargeable battery packs have been widely adopted in them. Battery packs need to be constantly monitored and managed in order to maintain the safety, efficiency and reliability of the overall electric vehicle system. A battery management system consists of a battery fuel gauge, optimal charging algorithm, and cell/thermal balancing circuitry. It uses three non-invasive measurements from the battery, voltage, current and temperature, in order to estimate crucial states and parameters of the battery system, such as battery impedance, battery capacity, state of charge, state of health, power fade, and remaining useful life. These estimates are important for the proper functioning of optimal charging algorithms, charge and thermal balancing strategies, and battery safety mechanisms. Approach to robust battery management consists of accurate characterization, robust estimation of battery states and parameters, and optimal battery control strategies. This paper describes some recent approaches developed by the authors towards developing a robust battery management system.*

***Keywords:*** *Battery Management Systems; Battery Fuel Gauge; State of Charge; State of Health; Power Fade; Capacity Fade; Robust Estimation; Predictive Control.*

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