Prediction of Remaining Useful Life of a Lithium – Ion Battery using Machine Learning

ABSTRACT

Automobile vehicles, essential for commuting, goods transportation, travel services, and more, predominantly use hydrocarbon fuels like petrol and diesel. These traditional vehicles, while widely used, contribute significantly to air pollution, global warming, and fossil fuel depletion due to their emission of greenhouse gases such as carbon dioxide, nitrous oxide, and methane. In response, the automotive industry is shifting towards environmentally friendly alternatives, primarily electric vehicles powered by lithium-ion batteries (LIBs). However, LIBs have a limited lifespan, and their end-of-life usage can lead to severe consequences, including catastrophic explosions. Additionally, range anxiety remains a significant barrier to electric vehicle adoption. Thus, accurately predicting the remaining useful life (RUL) of LIBs is crucial. Advanced algorithms, such as machine learning models, are employed to predict the RUL of these batteries, ensuring safety and enhancing consumer confidence in electric vehicles.

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