Project

Estimate Battery State of Charge Using Deep Learning

Motivation

Lithium-ion batteries are deployed in a wide range of applications due to their low and falling costs, high energy densities and long lifetimes.

Modeling lithium-ion batteries is a complicated task due to their electrochemical processes and complex behavior under varying conditions. These batteries exhibit non-linear dynamics influenced by factors such as temperature, state of charge, and operating conditions, making traditional modeling approaches insufficient for accurate predictions.

A machine learning approach is essential for overcoming these challenges. Machine learning algorithms excel at identifying patterns and relationships within large datasets, making them well-suited for capturing the complex behaviors of lithium-ion batteries. By training on diverse datasets encompassing a wide range of operating conditions and parameters, machine learning models can learn to predict battery performance with higher accuracy than conventional methods.

https://www.craiyon.com/

Tasks:

- Getting an overview of the deep learning algorithms in MATALB
- Using a deep learning algorithm to estimate the battery state of charge of lithium-ion cell for a specific data-set
- Documentation

Requirements:

- MATLAB-experience is advantageous
- Motivation to acquire new skills and knowledge

In case you are interested and need more information, do not hesitate to contact me via phone, or mail for a meeting in person.

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