

System-Level and Data-Aware Management of Battery Systems

Dr Xinfan Lin

*Mechanical and Aerospace Engineering
University of California*

Friday 14 July 2017

2.00pm

LR7, IEB

Abstract:

Batteries have become an indispensable part of our life today, seeing applications in consumer electronics, electric vehicles, and energy generation systems among many others. Battery management (estimation and control) is critical for the safe, efficient, and enduring performance of the battery systems. In this talk, we will start with the basic functions of a battery management system and the state of art in research and practice. Then we will explore the critical missing pieces and seek solutions via control methods. The first missing piece is the gap between cell level and system level battery management. Most existing methods focus on estimating and controlling the behaviour of single battery cells, while the industry has long been looking for a system-level solution for the whole battery pack consisting of a large number of cells. The second missing piece is the lack of data selection method to guarantee the accuracy and reliability of real-time battery status estimation and balance the computational complexity. The ultimate goal is to establish a system-level and data-aware framework for battery management by combining these two research threads.