Control of Battery Systems

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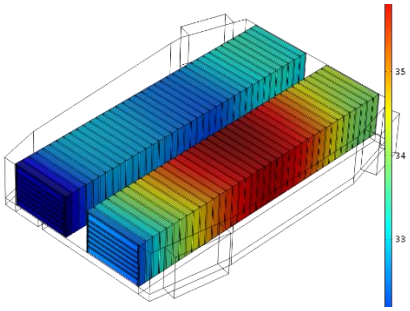
Location: Bainer 1062 **2/9/2017** **4:10-5:00PM**

Abstract

Battery has become an indispensable part of our life today, seeing applications in consumer electronics, electric vehicles, energy generation systems among many others. Battery management (estimation and control) is critical for safe, efficient, and enduring performance of the battery systems. In this talk, we will start with understanding the basic functions of battery management and the state of art in research and practice. Then we will explore the critical missing pieces and try to use control knowledge to find solutions. The first missing piece is the gap between cell level and system level battery management. Most existing methods focus on estimating and controlling the behavior 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 a data selection method to guarantee the accuracy of battery status estimation and balance computational complexity. At the end, we will see how to use the developed methodologies to explore the world beyond battery.



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About presenter

Xinfan Lin joined the MAE Department of UC Davis as an Assistant Professor in 2017. Before that, he was a Research Engineer at Ford Motor Company for two and a half years. His research area is dynamic systems and control with applications in energy systems among others. He has been working on designing battery management solutions for electric vehicles (EVs) and developing EV subsystems and components. He received B.S. and M.S. degrees in Automotive Engineering from Tsinghua University, China, in 2007 and 2009, and Ph.D. in Mechanical Engineering from the University of Michigan in 2014.