

(Online) Machine Learning-based Lifetime Prediction and Charging Optimization of Lithium-ion Batteries

Distinguished
Seminar Series
數據科學大師講座

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Abstract

This presentation will describe advances in machine learning-based techniques for addressing systems problems that arise for lithium-ion batteries. The specific systems problems include the prediction and classification of battery cycle lifetime (aka remaining useful life), the determination of optimal charging protocols, and the identification of fundamental physicochemical expressions for electrochemical kinetics, thermodynamics, and mass transfer from real-time video imaging. The development of the techniques and their application are in collaboration with materials science, applied physics, and computer science researchers at Stanford University, Toyota Research Institute, and MIT.

Biography

Dr Richard D. Braatz is the Edwin R. Gilliland Professor of Chemical Engineering at the Massachusetts Institute of Technology (MIT), where he conducts research in process analytics, modeling, and control. Braatz received an M.S. and Ph.D. from the California Institute of Technology and was the Millennium Chair and Professor at the University of Illinois at Urbana-Champaign and a Visiting Scholar at Harvard University before moving to MIT. He has published over 300 papers and three books, including Fault Detection and Diagnosis in Industrial Systems. Dr Braatz is a Fellow of IEEE, IFAC, AIChE, and AAAS and a member of the U.S. National Academy of Engineering.