Latest Control and ML Challenges in Lithium Ion Battery Management Systems

Dr Umut Genc

Eatron Technologies

Monday 27 February 2023
2.00pm
MR4, IEB

Abstract:

Society and mobility at large have been going through a big transformation as humanity is trying to reduce CO2 emissions. A big part of this transformation is about electrification of all means of travel including cars. At the heart of electrification sits a single component called a Lithium-Ion (Li-Ion) battery. Proper and safe management of batteries is critical to achieve sustainable widespread electrification in the near future. Battery Management Systems (BMS) are specifically designed to protect, manage and run batteries during their lifecycle in automotive or other applications. In this talk we will look at the fundamental control and estimation problems for Li-Ion batteries. Specifically we will consider SoX (state of charge & state of health of cells) estimation problems and how modern control techniques can improve
performance, safety and sustainability of battery management in real life. In the final part we will also discuss how modern AI/ML can be used to further improve the performance of the BMS.