Mini-course 07: Kalman Particle Filters

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In many engineering problems, it is paramount to monitor the system to meet operational objectives, as safety margins and quality parameters. However, direct system observation is a complex task. In this regard, state estimation problems solved through Kalman or Particle Filters are of great interest. The Kalman Filter is a recursive estimator used for the estimation of linear-Gaussian dynamic systems. In this seminar, the method and its recursive equations will be demonstrated. Extensions of the classic approach will be presented, such as the Steady State Kalman Filter, as well as the Extended and Unscented Kalman filter for nonlinear applications. In the Particle Filter method, the posterior density is represented in terms of random samples and associated weights. In the mini-course, background and basic aspects of Particle Filters will be presented, in special the algorithms SIS, SIR and ASIR, with the application to engineering problems.

Period: 6/Nov - 10/Nov (1 week)
Lectures: 8, 9, 10/Nov (from 10:00 to 12:00)
Room: 333