Decentralized Coverage Control with Differential-drive Robots

The problem of decentralized coverage control involves driving multiple sensing robots to an 'optimal' configuration in a convex domain so as to sense a phenomena or event. This is of primary importance in disaster mapping with mobile robot sensors such as oil spills, nuclear radiation leaks, gas leaks and so on. In this talk we will briefly cover the original mathematical formulation of the problem which combines optimal and Lyapunov based control design. We then move on to present advancements to existing results proposed by our research group, specifically in the direction of robot model improvements and accommodating model uncertainty.