Abstract:

The System Level Synthesis (SLS) approach provides a truly scalable framework for posing and solving large-scale distributed control problems. The SLS framework consists of three core elements: system-level parameterizations, system-level constraints, and system-level synthesis problems. In this talk I will describe how the combination of these elements parameterizes the largest known class of constrained controllers that admit a convex formulation. I will also cover recent results on robustness and controller structure, and discuss applications ranging from frequency control of power systems to transportation systems.