



Open Thesis (MA)

Data-driven distributed MPC of dynamically coupled linear systems

Description: In a recent work, we made preliminary steps towards a data-driven distributed model predictive control (D3MPC) scheme for dynamically coupled systems. We used a distributed adaptation of the Fundamental Lemma by Willems et al., allowing to parametrise system trajectories using only measured input-output data without explicit model knowledge. The MPC scheme relies on the subsystems guaranteeing that they stay sufficiently close to what they communicated as a planned trajectory to the neighbours, which is ensured by consistency constraints in the local MPC optimisation problems. The work left several open questions. For example, we should refine an assumption on the subsystems (or their properties) that a small deviation in a trajectory results in a small deviation on the over-all system (cf. “small-gain”). Moreover, we are looking for more sophisticated terminal ingredients. cf. M. Köhler et al. (2022), <i>Data-driven distributed MPC of dynamically coupled linear systems</i> , MTNS 2022	Supervisor: Matthias Köhler Room 3.240
	Area: Model predictive control data-driven control
	Properties: Type: MA 25% literature 60% theory 15% simulation
Prerequisites: <ul style="list-style-type: none">• <i>Model Predictive Control</i>• interest in distributed systems• helpful but not necessary: <i>Data-driven control</i>	Beginning: anytime

Further information on www.ist.uni-stuttgart.de/lehre/bama

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