Informationstechnische Regelung (Prof. Hirche)

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Titel: Separation Principle in Event-triggered Interconnected Networked Control Systems

Abstract: One of the core challenges in Networked Cyber-Physical systems is the control under resource constraints in the cyber part, e.g. communication constraints due to energy limits of battery-driven wireless sensors. Event-triggered control schemes, i.e. control schemes where information is only transmitted when important, have been proven to perform particularly well if such resource constraints are present. However, attention has to be paid to the potential complication in the control design due to the dual effect of control. In this work, we investigate the separation of estimation and control in event-triggered discrete-time stochastic systems which are physically interconnected. The separation principle depends heavily on the information pattern and resource constraints, and an attempt is made to show its validity for a class of interconnection graphs. Furthermore, we focus on the stability analysis of such systems under a given triggering law based on local conditions for each of the subsystems.

Kongresstitel: International Symposium on Networked Cyber-Physical Systems


Jahr: 2016

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