

Open Thesis (MA)

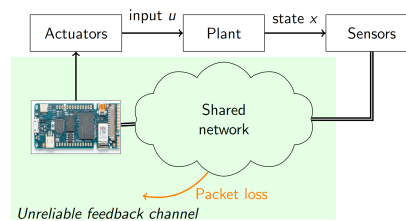
Controller Synthesis for Systems with Unreliable Feedback Channel

Description:

A recent problem in the control of networked- and embedded systems is to guarantee stability despite unreliabilities in the feedback-loop. Such unreliabilities arise from the implementations of controllers on shared embedded hardware or from imperfections of communication systems that may be part of the feedback-loop. To model the unreliabilities, window-based dropout descriptions have proven to be a powerful analysis tool in the context of networked control systems (NCS). An example for such a description is, that in any window of m consecutive transmissions, $n < m$ transmissions are guaranteed to be successful. Efficient controller synthesis methods are available for NCS subject to window-based dropout descriptions. It seems therefore to be promising to use similar approaches also to handle deadline-misses for embedded control systems. However, the methods for NCS cannot be directly transferred on embedded systems since strategies for handling deadline-misses for embedded systems are different than those for handling dropouts for NCS. In this thesis, the goal is therefore to develop methods for the controller synthesis for embedded control systems based on the results for NCS.

Prerequisites:

- Strong background in control theory and mathematics
- Interest in theoretical problems



Supervisor:

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Area:

Networked Control Systems

Properties:

Type: **MA**

Beginning:

Please approach me via [email](#) in case of interest in the topic to discuss further details.