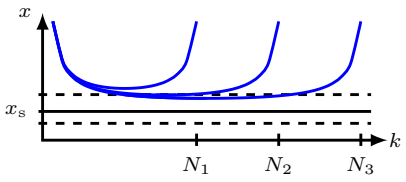
Universität Stuttgart
Institut für Systemtheorie und Regelungstechnik
Prof. Dr.–Ing. Frank Allgöwer

Open Thesis (MA)

Robustness in Unconstrained Economic MPC for Periodic Optimal Operation

Description:



A model predictive controller (MPC) solves at each time step a finite-horizon optimal control problem. Then, the first input of the resulting optimal input sequence is applied to the plant and the optimization problem is solved again for a new measuremt at the next time step. This optimization based structure allows to directly optimize over economic criterions like energy consumption or production amounts. If the optimal operating behaviour resulting from the specified cost is not known apriori, terminal conditions cannot be used and an unconstrained MPC design is needed. The existing unconstrained economic MPC schemes, however, are sensitive to disturbances or environmental changes if the optimal operating behaviour is not a steady state operation but for example periodic. The goal of this thesis is to develop an MPC scheme that overcomes this problem.

Prerequisites:

- The course *Model Predicitve Control* is required
- Experience with *Matlab* is desired
- Interest in *theoretical* derivations and *mathematical* proofs is essential

Supervisor:

Lukas Schwenkel
Room 3.234

Area:

MPC

Properties:

Type: MA

30% literature
50% theory
20% implementation

Beginning:

any time

Weitere Informationen: www.ist.uni-stuttgart.de/lehre/bama

Aushang vom 26. Juli 2020