Development and Implementation of a Model Predictive Controller for Real-Time Applications

- **Motivation:**

  Optimization-based control strategies, like **Model Predictive Control (MPC),** are a powerful technique to achieve control objectives while already considering the dynamics and constraints of the system. Furthermore, MPC is able to deal with nonlinear as well as multivariable systems and is known to generate robust feedback loops. Solving optimization problems in a real-time environment is still a challenging task. Therefore, the focus of this work should be the implementation of an MPC on a real-time hardware.

- **Objectives:**
  - Development of an MPC for a laboratory setup including system modelling
  - Simulation studies for different optimization frameworks
  - Implementation of the MPC within a real-time capable optimization framework

- **Start**: now
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