SSY281 Model Predictive Control

Micro-homework 11

Alternative formulations of MPC

Deadline: March 1, 10:00

Systems & Control
Department of Electrical Engineering
Chalmers University of Technology

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Instructions

This assignment is **individual** and must be solved according to the following rules and instructions:

- Written report:
  - It should be one page with pdf format.
  - The report should be uploaded *before the deadline* to your project document area in PingPong.
  - Name the report as MA11_XX.pdf, where XX is your *group* number.

Question 1. *Consider the following Hankel matrix and find a representation of (A, B, C) when the system as one input and one output.*

$$H = \begin{bmatrix} 0 & 0.5 \\ 0.5 & 1 \end{bmatrix}$$

Question 2. *In a RH controller, what is the effect of a short control horizon, i.e. small M, on the complexity of the method? How does this effect the existence of a feasible solution?*

Question 3. *Qualitatively compare Predictive Functional Control (PFC) against RH controller in terms of complexity and optimality.*