Micro Homework 10

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Question 1. *What is the practical consequence of the possibility that the RHC becomes infeasible?*

Question 2. *How can the risk of infeasibility be avoided in practice?*

Question 3. *What is the significance of* banded *matrices when solving QP problems?*

Question 4. *How can the number of control signal values to be determined in an RHC be reduced, without limiting the control horizon?*

(Q1) That we can't find a control sequence, the optimization problem doesn't have a solution. Then we lose ability to control.

(Q2) Use soft constraints, expand terminal states x_f, increase prediction horizon.

If we still hit it we can find alternative solutions:

E.g. take previous control signal, PID, ad hoc.

(Q3) Reduce memory usage and computational complexity.

(Q4) Piecewise constant control signal.

Eg. $u_1 = u_0$ $u_3 = u_2$, $u_5 = u_4$.

Hence we keep control horizon but reduce number of control signals.