

$$\begin{aligned}
&\text{minimize} && x_T^T Q_T x_T + \sum_{t=1}^{T-1} x_t^T Q x_t + u_t^T R u_t \\
&\text{subject to} && x_{t+1} = A x_t + B u_t \quad t = 0, \dots, T-1 \\
&&& u_{\min} \leq u_t \leq u_{\max} \quad t = 0, \dots, T-1 \\
&&& x_{\min} \leq x_t \leq x_{\max} \quad t = 1, \dots, T \\
&&& x_0 = x_{\text{init}},
\end{aligned}$$