Correspondence

Correction to "Constrained model predictive control: stability and optimality"☆

D. Q. Mayne[a,*], J. B. Rawlings[b]

[a]*Department of Electrical and Electronic Engineeering, Imperial College of Science, Technology and Medicine, London SW7 2BT, UK*
[b]*Department of Chemical Engineering, University of Wisconsin, Madison, USA*

The purpose of this note is to correct a minor error in Mayne, Rawlings, Rao and Scokaert (2000). In the 12th line from the bottom of the first column on p. 798, please replace the equality by an inequality, yielding

$$V_{i+1}^0(x) - V_i^0(x) \le \ell(x, \kappa_i(x)) + V_i^0(f(x, \kappa_i(x)))$$
$$- \ell(x, \kappa_i(x)) - V_{i-1}^0(f(x, \kappa_i(x)))$$
$$\le 0, \quad \text{for all } x \in X_i.$$

The first inequality follows from the fact that, for all $x \in X_i$,

$$V_{i+1}^0(x) = \ell(x, \kappa_{i+1}(x)) + V_i^0(f(x, \kappa_{i+1}(x)))$$
$$\le \ell(x, \kappa_i(x)) + V_i^0(f(x, \kappa_i(x)))$$

since both $\kappa_i(\cdot)$ and $\kappa_{i+1}(\cdot)$ are defined in X_i, which is a subset of X_{i+1}, and $\kappa_{i+1}(x)$ is the constrained minimizer of $\ell(x, \cdot) + V_i^0(f(x, \cdot))$ at every x in X_{i+1}.

References

Mayne, D. Q., Rawlings, J. B., Rao, C. V., & Scokaert, P. O. M. (2000). Constrained model predictive control: stability and optimality. *Automatica*, 36, 789–814.