From Bellman to Dijkstra - set oriented computational methods for optimal control problems

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Wednesday 5 February 2020
2.00pm
MR4, IEB

Abstract:

We review set oriented computational methods for solving Bellman's optimality principle. In particular, we show how to construct globally optimal robust feedback controllers for nonlinear systems and how to elegantly handle perturbed, quantized, hybrid and event systems within this unifying framework. The theory will be illustrated by several examples from the engineering sciences.