Optimal Control Problems of Infinite-Horizon Time-Delayed Systems using Haar Wavelets

We consider an approximation scheme using Haar wavelets for solving infinite horizon time-delayed optimal control problems. The problem is first transformed, using a Páde approximation, to one without a time-delayed argument then by a suitable change of variable, we transform the obtained non-delay optimal control problem to a finite-horizon nonlinear optimal control problem. Then the nonlinear problem is solved by means of the direct method using the Haar wavelets. The accuracy of the presented method is demonstrated by an illustrative example.

Keywords:
Infinite-horizon time-delayed optimal control problems, Approximation, Rationalized Haar functions, Nonlinear programming

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