Reconstruction of Independent Sub-Domains in a Hamilton-Jacobi Equation and its Application to Parallel Calculus

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Abstract

A previous knowledge of the domains of dependence of a dynamic programming equation can be useful in its study and approximation. Information on the nature are, in general, difficult to obtain directly from the dynamics of the problem. In this paper we introduce formally the concept of *Independent Sub-Domains* discussing their main properties and we provide a constructive implicit representation formula. Using these results an original approach to independent domain reconstruction is presented and its usefulness in the parallel approximation of the solution is discussed.

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References

[1] S. Cacace, E. Cristiani, M. Falcone and A. Picarelli, *A patchy dynamic programming scheme for a class of Hamilton-Jacobi-Bellman equation*, SIAM J. Scientific Computing, vol. 34 (2012) no. 5, pp. 2625–2649.

[2] A. FESTA, *On the Reconstruction of independent sub-domains in a Dynamic Programming Equation and its Application to Parallel Calculus*, preprint (2014).