

## RECENT ADVANCES IN THE APPROXIMATION OF OPTIMAL CONTROL PROBLEMS VIA DYNAMIC PROGRAMMING

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The approximation of optimal control problems and games via the solution of the Hamilton–Jacobi–Bellman or Isaacs equation is a well known technique. The advantage of this method is that it stands on solid mathematical grounds, the drawback is the difficulty to use it for large scale problems due to the curse of dimensionality.

I will present some recent advances trying to develop new algorithms for the solutions of equations in rather high dimension ( $n \leq 10$ ). Among these techniques we will discuss efficient algorithms in high dimension and their application to dynamic programming equations, fast marching schemes and adaptive domain decomposition. The methods will be illustrated by several examples giving some hints on their efficiency, accuracy and implementation.