

Optimal control of stochastic differential equations with memory

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Abstract

We consider a class of optimal control problems of stochastic delay differential equations (SDDE) where the delay enters both the state and the control. We reformulate the problem as an infinite dimensional stochastic control problem to which we associate, through the dynamic programming principle, a second order Hamilton-Jacobi-Bellman equation. We show a verification theorem and we exhibit some simple cases where such equation admits an explicit smooth solution, allowing us to construct optimal feedback controls.