

SUFFICIENCY OF MARKOV POLICIES FOR CONTINUOUS-TIME MARKOV DECISION PROCESSES

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One of the basic facts of the theory of Markov Decision Processes is that for any policy there exists a randomized Markov policy with the same marginal state-action distributions. This fact implies that for major objective criteria, including expected total costs, expected total discounted costs, and average costs per unit time, it is sufficient to restrict the set of all policies to the set of randomized Markov policies. This is also true for problems with multiple criteria and constraints. In this talk we present similar results for Continuous-Time Markov Decision Processes (CTMDPs). The proof consists of two steps. The first step describes the structure of solutions to Kolmogorov's equations for nonhomogeneous jump Markov Processes. The second step applies these results to CTMDPs.