

Verification of Markov decision processes using learning: Rigorous and efficient

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Abstract

We provide practically efficient approaches for analysis of stochastic systems. They are based on traditional techniques of value iteration and strategy iteration enriched by ideas coming from machine learning and planning. We discuss basic reachability objective as well as extensions to LTL, mean payoff, and to the game setting. We demonstrate the usability of the approach by speed up in orders of magnitude on classical benchmarks.