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The value iteration algorithm in risk-sensitive average Markov decision chains with finite state space. (English) [Zbl 1082.90125](#)

Math. Oper. Res. 28, No. 4, 752-776 (2003).

Summary: This work concerns discrete-time Markov decision chains with finite state space and bounded costs. The controller has constant risk sensitivity λ , and the performance of a control policy is measured by the corresponding risk-sensitive average cost criterion. Assuming that the optimality equation has a solution, it is shown that the value iteration scheme can be implemented to obtain, in a finite number of steps, (1) an approximation to the optimal λ -sensitive average cost with an error less than a given tolerance, and (2) a stationary policy whose performance index is arbitrarily close to the optimal value. The argument used to establish these results is based on a modification of the original model, which is an extension of a transformation introduced by *P. J. Schweitzer* [*J. Math. Anal. Appl.* 34, 495–501 (1971; [Zbl 0218.90070](#))] to analyze the the risk-neutral case.

MSC:

[90C40](#) Markov and semi-Markov decision processes

[90C39](#) Dynamic programming

Cited in **6** Documents

Keywords:

Successive approximations method; Schweitzer's transformation; risk-sensitive average optimality equation; stopping rule for the value iteration scheme

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