MINIMIZING RISK PROBABILITY IN SEMI-MARKOV DECISION PROCESSES

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Abstract: This talk concerns with the risk probability criterion for semi-Markov decision processes. The goal of the optimization is to minimize the risk probability that a system reaches a prescribed reward level during a first passage time to a given target set. Besides the motivation of the work in this talk, we will show the main results, which include the establishment of the optimality equation, the existence of an optimal policy, a value iteration algorithm for computing the optimal value, and a numerable example.

References

[1] M. Bouakiz and Y. Kebir (1995). Target-level criterion in Markov decision processes. *J. Optim. Theory Appl.*, **86**: 1-15.

[2] Y.H. Huang, and X.P. Guo (2009). Optimal risk probability for first passage models in semi-Markov decision processes. *J. Math. Anal. Appl.*, **359**: 404-420

[3] Y.H. Huang, X.P. Guo, and X.Y. Song (2011). Performance analysis for controlled semi-Markov systems with application to maintenance. *J. Optim. Theory Appl.* **150**: 395-415.

[4] Y. Ohtsubo and K. Toyonaga (2002). Optimal policy for minimizing risk models in Markov decision processes. *J. Math. Anal. Appl.*, **271**: 66-81.

[5] D.J. White (1993). Minimizing a threshold probability in discounted Markov decision processes. *J. Math. Anal. Appl.*, **173**: 634-646