

STOCHASTIC SEQUENTIAL ASSIGNMENT PROBLEM WITH THRESHOLD CRITERIA

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The stochastic sequential assignment problem (SSAP) allocates distinct workers to sequentially arriving tasks with stochastic parameters to maximize the expected total reward. In this paper, the assignment of tasks is performed under the threshold criterion, which seeks a policy that minimizes the probability of the total reward failing to achieve a target value. A Markov decision-process approach is employed to model the problem, and sufficient conditions for the existence of a deterministic Markov optimal policy are derived, along with fundamental properties of the optimal value function. An algorithm to approximate the optimal value function is presented, and convergence results are established.