



Finding Minimum Spanning Tree in Stochastic Graph by Using Learning Automata

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Abstract: In this paper, an algorithm based on learning automata for finding the Minimum Spanning Tree in a stochastic graph when the weight density functions of the edges are unknown and only samples of distributions are available, is proposed. The goal is to find Minimum Spanning Tree with least sampling from edges of the graph. In our proposed algorithm at each iteration, a learning automata candidate an edge for sampling and then with some statistic analysis we specify whether or not sample from that edge. Using simulation, we have shown that with proper selection of parameters of the learning automata, the proposed algorithm is able to find the minimum spanning tree with high probability. To evaluate the proposed algorithm, we compared the number of samples taken by the proposed algorithm with the number of samples needed by the standard sampling method. The result of comparison indicates the efficiency of the proposed algorithm in terms of the number of samples.