Dedicated to Professor Ioan A. RUS on the occasion of his 70th anniversary

Solving the generalized minimum spanning tree problem with simulated annealing

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ABSTRACT. We consider a generalization of the minimum spanning tree problem, called the generalized minimum spanning tree problem, denoted by GMST. It is known that the GMST problem is $\mathcal{NP}$-hard. We present an effective algorithm for this problem. The method combines a simulated annealing algorithm (SA) with a local greedy algorithm. The heuristic that we proposed found solutions that were optimal for graphs with nodes up to 280 and were within at most 24% of optimality for larger problems, while the existing algorithms from the literature become computationally intractable.

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