Improved Sliding Shortest Path Algorithm: Performance Analysis
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Given an undirected, weighted graph, and a pair of vertices $s$ and $t$, connected by the shortest path, and an edge $pq$ not lying on the shortest path, what is the minimal change required in the given graph to cause the shortest path between $s$ and $t$ to pass through edge $pq$? This is a type of a problem often faced by network administrators in the telecommunication world. Unfortunately, the problem is NP-hard and one resorts to heuristics. Recently, a heuristic called the Improved Sliding Shortest Path Algorithm was presented as an improvement of an earlier heuristic. In this paper, we provide a detailed numerical comparison of the two algorithms and demonstrate the superiority of the improved version via applications to real-life networks.

Keywords: shortest path, algorithm, weighted graph, undirected, sliding, constrained, rerouting, network, optimization, performance analysis, minimal edge weight changes.