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**Bifactor approximation for location routing with vehicle and facility capacities**

Location Routing is a fundamental planning problem in logistics, in which strategic location decisions on the placement of facilities (depots, distribution centers, warehouses etc.) are taken based on accurate estimates of operational routing costs. We present an approximation algorithm, i.e., an algorithm with proven worst-case guarantees both in terms of running time and solution quality, for the general capacitated version of this problem, in which both vehicles and facilities are capacitated. Before, such approximation algorithms were only known for the special case where facilities are uncapacitated or where their capacities can be extended arbitrarily at linear cost. Previously established lower bounds that are known to approximate the optimal solution value well in the uncapacitated case can be off by an arbitrary factor in the general case. We show that this issue can be overcome by a bifactor approximation algorithm that may slightly exceed facility capacities by an adjustable, arbitrarily small fraction of the vehicle capacity while approximating the optimal cost by a constant factor. In addition to these proven worst-case guarantees, we also assess the practical performance of our algorithm in a comprehensive computational study, showing that the approach allows efficient computation of near-optimal solutions for instance sizes beyond the reach of current state-of-the-art heuristics.