

Mixed-Integer Nonlinear Programming Models for the Close-Enough Traveling Salesman Problem

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Problem Statement

In the Close-Enough Traveling Salesman Problem (CETSP) [1, 2, 3, 4], we are given an undirected graph $G = (V, E)$ where V is the set of n nodes and E is the set of edges. Each node is located at (a_i, b_i) and has a radius r_i associated with it. By definition, the radius associated with the depot is 0. The objective is to find the minimum distance Hamiltonian cycle over all nodes that passes within r_i units of each node i at point (x_i, y_i) by choosing the sequence of nodes in the cycle and the location (x_i, y_i) at which i is visited. The length of each edge e_{ij} is thus a function of the chosen (x_i, y_i) visiting locations.

References

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