Facility Location Optimizer

A tool for solving location problems.

Classification scheme for location problems

1. Information about the classification scheme

For identifying location problems, we use a classification scheme proposed in the literature of location theory by Hamacher and Nickel. The classification contains five positions

$$\text{Pos 1.} \mid \text{Pos 2.} \mid \text{Pos 3.} \mid \text{Pos 4.} \mid \text{Pos 5.} \quad ,$$

where:

- Pos 1. : Number of new facilities (e.g., 1 for single-facility location problems),
- Pos 2. : Type of location problem (e.g., planar (P), discrete (D) or network location problem (N)),
- Pos 3. : Features of the location problem (e.g., positive weights, $v > 0$, i.e., $v_i > 0$ for all $i = 1, \ldots, m$; weights equal to one, $v = 1$, i.e., $v_i = 1$ for all $i = 1, \ldots, m$; negative weights, $w < 0$, i.e., $w_i < 0$ for all $i = 1, \ldots, m$; only attraction points, $(+)$; attraction and repulsion points, $(+, -)$; type of the feasible set, for instance $X = \mathbb{R}^2$ or X represents a polytope),

- Pos 4. : Definition of the distances (e.g., Manhattan metric, d_1; Maximum metric, d_∞; Euclidean metric, d_2; squared Euclidean metric, d_2^2; l_p metric, d_p; polyhedral gauge, μ; mixed polyhedral gauges, μ_i; attraction metric d and repulsion metric induced by a gauge μ, (d, μ)),
- Pos 5. : Linkage of individual distances (e.g., Median problem (median), Center problem (center), Vector problem (s-Eff -vector, Eff -vector or w-Eff -vector).

2. References

(A) H. W. Hamacher. *Mathematische Lösungsverfahren für planare Standortprobleme.* Vieweg Verlag, 1995.

(B) H. W. Hamacher and S. Nickel. *Classification of Location Models.* Location Science, 6:229-242, 1998.