Publicacions més rellevants de la línia de recerca:
# Localització discreta

**Referència:** Albareda-Sambola, M., Fernández, E. and Laporte, G. Capacity and Distance Constraint Plant Location Problem. *Computers & Operations Research*, **36(2)** (2009), pp. 597–611.

**Abstract:** This article introduces a new problem called the Capacity and Distance Constrained Plant Location Problem. It is an extension of the discrete capacitated plant location problem, where the customers assigned to each plant have to be packed in groups that will be served by one vehicle each. The constraints include two types of capacity. On the one hand plants are capacitated, and the demands of the customers are indivisible. On the other hand, the total distance traveled by each vehicle to serve its assigned customers in round trips plant-customer-plant is also limited. The paper addresses different modeling aspects of the problem. It describes a tabu search algorithm for its solution. Extensive computational tests indicate that the proposed heuristic consistently yields optimal or near-optimal solutions.

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**Referència:** Albareda-Sambola, M., Díaz, J.A. and Fernández, E. Lagrangean Duals and Exact Solution to the Capacitated $p$-Center Problem. *European Journal of Operational Research*, **201(1)** (2010), pp. 71–81.

**Abstract:** In this work, we address the capacitated p-center problem (CpCP). We study two auxiliary problems, discuss their relation to CpCP, and analyze the lower bounds obtained with two different Lagrangean duals based on each of these auxiliary problems. We also compare two different strategies for solving exactly CpCP, based on binary search and sequential search, respectively. Various data sets from the literature have been used for evaluating the performance of the proposed algorithms.

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**Referència:** Contreras, I., Fernández, E. and Marín, A. The tree-of-hubs location problem: A comparison of formulations. *European Journal of Operational Research*, **202(2)** (2010), pp. 390–400.

**Abstract:** This paper presents the Tree of Hubs Location Problem. It is a network hub location

problem with single assignment where a fixed number of hubs have to be located, with the particularity that it is required that the hubs are connected by means of a tree. The problem combines several aspects of location, network design and routing problems. Potential applications appear in telecommunications and transportation systems, when set-up costs for links between hubs are so high that full interconnection between hub nodes is prohibitive. We propose an integer programming formulation for the problem. Furthermore, we present some families of valid inequalities that reinforce the formulation and we give an exact separation procedure for them. Finally, we present computational results using the well-known AP and CAB data sets.