Fifteenth International Conference Zaragoza-Pau on Mathematics and its Applications
Jaca, September 10–12th 2018

An evolutionary algorithm for the Multi-Period Facility Location Problem

Herminia I. Calvete[1], **Pedro M. Mateo**[2], **Carlos Sández**

SUMMARY

Facility Location problems study the optimal allocation of a set of facilities so as to supply some demand nodes while minimizing the allocation and maintenance costs. Much of the available literature on facility location is focused on single-period assignments, and this is unrealistic for many use cases.

A model belonging to the class of facility location problems which addresses those issues is the multi-period incremental service facility location problem (MISFLP). The MISFLP was first presented in [1] and considers a multi-period setting where the minimum number of facilities to open is fixed for each period. This allows for a more gradual deployment of a service, suitable for private sectors and non-essential necessities.

The goal of this study is to devise the first heuristic procedure to obtain optimal or near-optimal solutions for the MISFLP through the use of a specially tailored evolutionary algorithm. A computational study is carried out to assess the performance of the algorithm.

Keywords: Evolutionary algorithm, Multi-period, Location, MISFLP

AMS Classification: 90B80, 90C59, 90C05

References

[1] M. Albareda-Sambola, E. Fernández, Y. Hinojosa and J. Puerto. The multi-period incremental service facility location problem. *Computers & Operations Research* **36**(5), 1356–1375, 2009.

[1]Department of Statistical Methods
University of Zaragoza
email: herminia@unizar.es

[2]Department of Statistical Methods
University of Zaragoza
email: mateo@unizar.es