Hybridization of Differential Evolution and Teaching-learning-based optimización (DE-TLBO)

The metaheuristic used is a combination of two metaheuristics: Differential evolution (DE) and Teaching-learning-based optimización (TLBO). The chaos theory metaheuristic is applied to escape possible local optima. When the differential evolution algorithm is used, it uses two types of mutations to obtain both exploration and exploitation of the search space.

The parameters used in each testbed are:

Parameters name	Parameters	Testbed 1	Testbed 2
Scalar number F1	deParameters.F1	2	2
Maximum crossover rate	deParameters.Cmax	1	1
Minimum crossover rate	deParameters.Cmin	0	0
Iterations number to apply chaos theory	deParameters.apply_chaos	12	12
Using bound constraints	deParameters.I_bnd_constr	1	1
Population	deParameters.I_NP	10	10
Number of max iterations	deParameters.I_itermax	500	5000
Double mutation	deParameters.double_mut	0.3	0.3

Details on the computing system and the programming language

The meta-heuristic was implemented in MATLAB, running on an Intel i5, 3.1 GHz, 8GB RAM, hardware platform.