Artificial bee colony algorithm with mutation differential (ABC_DE)

The metaheuristic used is the artificial bee colony algorithm (ABC algorithm). In the ABC algorithm, the bees are divided into three types; employed bees, onlookers, and scouts. Employed bees are responsible for exploiting available food sources and gathering the required information. They also share the information with the onlookers, and the onlookers select existing food sources to be further explored. When the food source is abandoned by its employed bee, the employed bees become scouts and usually search for new food source randomly but in this case, the bees scout start to search for a new food source based on a differential mutation strategy (differential mutation used in the differential evolution algorithm).

The parameters used in each testbed are:

Parameters name	Parameters	Testbed 1	Testbed 2
Scalar number F1	`deParameters.F1`	0.7	0.7
Using bound constraints	`deParameters.I_bnd_constr`	1	1
Population	`deParameters.I_NP`	10	10
Number of max iterations	`deParameters.I_itermax`	160	1667
Limit (bees scout)	`deParameters.L`	10	10

Details on the computing system and the programming language

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