Journal of *Memetic Computing*

Call for Papers
Thematic Issue on Brain Storm Optimization Algorithms

Background

The Brain Storm Optimization (BSO) algorithm is a new kind of swarm intelligence algorithm, which is based on one collective behavior of human being, that is, the brainstorming process. There are two major operations involved in BSO, i.e., convergent operation and divergent operation. A "good enough" optimum could be obtained through recursive solution divergence and convergence in the search space. The designed optimization algorithm will naturally have the capability of both convergence and divergence.

BSO possess two kinds of functionalities: capability learning and capacity developing. The divergent operation corresponds to the capability learning while the convergent operation corresponds to capacity developing. The capacity developing focuses on moving the algorithm's search to the area(s) where higher potential solutions may exist while the capability learning focuses on its actual search towards new solution(s) from the current solution for single point based optimization algorithms and from the current population of solutions for population-based swarm intelligence algorithms. The capability learning and capacity developing recycle to move individuals towards better and better solutions. The BSO algorithm, therefore, can also be called as a developmental brain storm optimization algorithm.

The capacity developing is a top-level learning or macro-level learning methodology. The capacity developing describes the learning ability of an algorithm to adaptively change its parameters, structures, and/or its learning potential according to the search states of the problem to be solved. In other words, the capacity developing is the search potential possessed by an algorithm. The capability learning is a bottom-level learning or micro-level learning. The capability learning describes the ability for an algorithm to find better solution(s) from current solution(s) with the learning capacity it possesses.

The BSO algorithm related papers are scattered in various journals and conferences. To the best of our knowledge, there are so far 75 papers, 8 theses, and 5 patents in total on the development and application of the BSO algorithm. The BSO algorithm can also be seen as a combination of swarm intelligence and data mining techniques. Every individual in the brain storm optimization algorithm is not only a solution to the problem to be optimized, but also a data point to reveal the

landscapes of the problem. The swarm intelligence and data mining techniques can be combined to produce benefits above and beyond what either method could achieve alone.

Aim

This special issue aims at presenting the latest developments of BSO algorithms, as well as exchanging new ideas and discussing the future directions of (developmental) BSO algorithm.

Scope

In this thematic issue, several aspects of brain storm optimization in Memetic Computing will be considered, but not limited to the following:

- ✓ Theoretical aspects of BSO algorithms;
- ✓ Analysis and control of BSO parameters;
- ✓ Parallelized and distributed realizations of BSO algorithms;
- ✓ BSO for multiple/many objective optimization;
- ✓ BSO for constrained optimization;
- ✓ BSO for discrete optimization;
- ✓ BSO for large-scale optimization;
- ✓ BSO algorithm with data mining techniques;
- ✓ BSO in uncertain environments;
- ✓ BSO for real-world applications.

Paper Submission

The papers should be submitted online through the manuscript submission system of the Memetic Computing Journal [submit here]. Information and guidelines on preparation of manuscripts are available on the journal website.

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