Artificial Bee Colony (ABC) algorithm is a global optimization algorithm which is motivated by the foraging behaviour of swarm of honey bee. The ABC has been successfully employed in solving many kind of complex engineering design problem. But due to the lack of imbalance between exploration and exploitation and insufficient guiding parameters ABC usually get stuck into local minima. In order to address this shortcoming a proper guiding parameter which has the ability to change dynamically depending on the nature of problem needs to be introduced. Therefore, this paper proposes an improved ABC algorithm using knowledge inherent in Cultural Algorithm (CA). Two new variants of ABC were developed using situation and normative knowledge. The performance of the developed variants was evaluated using a total of twenty (20) applied mathematical optimization benchmark functions. Simulation results clearly show that, all the newly proposed CABCA variants performed much better than the ABC.
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An Improved Artificial Bee Colony using Cultural Algorithm for Optimization Problem


Index Terms

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Keywords

Artificial Bee Colony, Cultural Algorithm, Exploration, Exploitation, variants, optimization and convergence.