Abstract:

Improving Artificial Bee Colony (ABC) optimization concept and performance is still devoting substantial interest. Enhancements are usually introduced in order to deal with some challenging issues such as exploitation and exploration abilities that have important impact on the convergence of the algorithm. Balancing these two properties can be achieved by manipulating the search strategies but also the general framework of the ABC model. This work along this idea develops a novel multiple search ABC with a cooperative learning paradigm, referred to as CLABC (Cooperative Learning ABC) algorithm. The attempt is to build a novel algorithmic framework relying on a better characterization of social learning capability among swarm bees with incorporating behavioral differences. The proposed approach is tested on several benchmark functions and compared with other ABC variants and advanced metaheuristics. The performance of the proposed CLABC can be clearly deduced from the obtained results that show superiority in the most of test cases.