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Using Cooperation Approaches at Different Levels of Artificial Bee Colony Method

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Abstract : In this work, a Multi-Level Artificial Bee Colony (called MLABC) is presented. In MLABC two species are used. The first species employs n colonies in which each of the them optimizes the complete solution vector. The cooperation between these colonies is carried out by exchanging information through a leader colony, which contains a set of elite bees. The second species uses a cooperative approach in which the complete solution vector is divided to k sub-vectors, and each of these sub-vectors is optimized by a a colony. The cooperation between these colonies is carried out by compiling sub-vectors into the complete solution vector. Finally, the cooperation between two species is obtained by exchanging information between them. The proposed algorithm is tested on a set of well known test functions. The results show that MLABC algorithms provide efficiency and robustness to solve numerical functions.

Keywords : artificial bee colony, cooperative, multilevel cooperation, vector
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