An Application for Improved Bee Colony Algorithm on A Multi-Objective Real-World Optimization Problem

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***Abstract*—This paper presents an application of improved bee colony algorithm for multi-objective optimization (IBMO) on a real-world optimization problem known as welded beam design. IBMO is founded on the principle of single objective artificial bee colony algorithm (ABC). It also combines the nondominated sorting strategy of NSGAII and classical multi-objective optimization procedures such as Pareto-Dominance, crowding distance, external archive, and etc. Furthermore, IBMO has an improvement method to accelerate the convergence by considering the number of function evaluations. By using several benchmark problems, the running consistency and robustness of IBMO has been reported in a previous study of authors. In this study, IBMO determines the parameters of welded beam engineering problem which has several constraints and two objectives: (1) minimum cost and (2) minimum end deflection. The experimental results are compared with two algorithms. The results clearly show that IBMO reaches the better results easily and it is a capable tool to solve multi-objective real world optimization problems**

***IndexTerms*: Multi-objective optimization, IBMO, ABC, welded beam design problem**

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