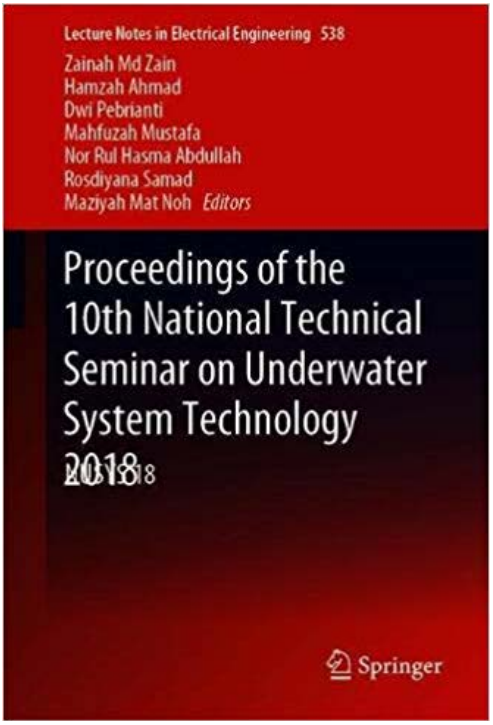

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Contents

Barnacles Mating Optimizer: A Bio-Inspired Algorithm for Solving Optimization Porblems

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***Abstract*—A novel bio-inspired optimization algorithm is proposed in this paper namely barnacles mating optimization (BMO) algorithm. The main inspiration of BMO is originated from the mating behavior of barnacles in nature. Barnacles are hermaphroditic micro-organisms which have both male and female sex reproductions. To create new off-springs, they must be fertilized by a neighbor. They are well-known for their long penises, about seven times the length of their bodies to cope with the changing tides and sedentary lifestyle. In BMO, the selection of barnacle's parents is decided randomly by the length of barnacle's penis to create new off-springs. The exploitation and exploration processes are the generation of new off-springs inspired by the Hardy-Weinberg principle and sperm cast situation, respectively. The effectiveness of proposed BMO is tested through a set of benchmark multi-dimensional functions which the global and local minimum are known. Comparisons with other recent algorithms also will be presented in this paper.**

Keywords*—*barnacles mating optimizer, benchmark functions, bio-inspired algorithm, optimization

popular genetic algorithm (GA) [2, 3], particle swam optimization (PSO) [4, 5], artificial bee colony (ABC) algorithm [6, 7], ant colony optimization (ACO) [8] and many more. As stated by the no free lunch (NFL) theorem [9], no algorithms can perform well in all optimization problems. One can perform well in one problem and suddenly is performing worst in other set of problems. Thus, researchers are motivated to invent new optimization algorithms to deal with a variety of optimization problems which have been proposed in recent literatures [1, 10-13].

This paper proposes a new bio-inspired algorithm namely barnacles mating optimizer (BMO) which mimics the mating behavior of barnacles. To the knowledge of authors, there is no previous studies on this subject in the optimization literature. The rest of the paper is organized as follows: Section 2 presents the algorithm's development of the BMO followed by results and discussion in Section 3. Section 4 states the conclusion of the paper.