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Editorial

Modern Trend of Artificial Bees and Fire Flies Algorithm in Dynamic Environment

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EDITORIAL NOTE

Special issue editorial: Artificial Bees and Fire flies Algorithm is the current swarm intelligence research output in diverse areas. The artificial bee colony and firefly algorithm are growing research interest and applications in the real world. These algorithms are getting the attention of researchers very rapidly, while they are comparatively new in swarm intelligence. It is happening because of their ease of implementation and simplicity. In recent years, swarm intelligence has proven its importance for the solution of those problems that cannot be easily dealt with classical mathematical techniques.

The foraging behavior of honey bees produces an intelligent social behavior and falls in the category of swarm intelligence. Artificial bee colony (ABC) algorithm is a simulation of honey bee foraging behavior. The Artificial Bee Colony algorithm is very popular and simple to solve complex optimization problems. There are lots of complexes real-world problem that are not solvable by conventional methods. In order to solve this type of the problem population base techniques are very helpful. The ABC simulates the foraging behavior of real honey bees to solve multi-model and multi-dimensional problems. In 2005 first identified that bees follow a systematic process while collecting nectar to produce honey. It is stochastic as some arbitrary elements play a crucial role in the optimization process and depict swarming behavior.

Recent research calls attention to the ABC algorithm's critical role. They offer an ABC methodology-based solution to the question "when transportation agencies should schedule resurfacing maintenance activity under given constraints?" The proposed ABC algorithm mimics the collective behavior of bees searching for the best nectar source while solving an optimization problem. The proposed method accounts for various factors like resource availability, economic considerations, engineering considerations while optimizing for resurfacing intensity and frequency. The proposed algorithm offers flexibility to the designer to have different maintenance strategies for various maintenance cycles.

The firefly algorithm has become an increasingly important tool of Swarm Intelligence that has been applied in almost all areas of optimization and engineering practice. Many problems from various areas have been successfully solved using the firefly algorithm and its variants. To use the algorithm to solve diverse problems, the original firefly algorithm needs to be modified or hybridized.

Current research of FA optimization is by developing adaptive logarithmic spiral-Levy FA (AD-IFA) that strengthens the LF-FA's local exploitation and accelerates its convergence. Our AD-IFA is integrated with logarithmic-spiral guidance to its fireflies' paths and adaptive switching between exploration and exploitation modes during the search process. Firefly algorithm (FA) is an active research interest as new optimization technique based on swarm intelligence in the current intelligence era.

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