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Modified Artificial Bee Colony (ABC) Algorithm using Dynamic Technique

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Abstract **- The artificial Bee Colony Algorithm is a maximum optimization technique. It has been used in various research papers. In this paper, the dynamic technique has been used in Artificial Bee Colony Algorithm, before this algorithm used the greedy technology of the algorithm. But due to some deficiency in the greedy technique, it has been replaced by the dynamic technique. Here in the Artificial Bee Colony Algorithm, an attempt has been made to overcome the lack of hygiene by using the dynamic technique. The methodology is depicted in this paper. Using this methodology, you can smooth access to data in network communication, reduce data access time, and also reduce energy consumption.**
Keywords: **Artificial Bee Colony (ABC) Algorithm, Internet of Things (IoT), Wireless Sensor Network (WSN), Cluster Head (CH)**

I. INTRODUCTION

Artificial Bee Colony (ABC) algorithm may be a nature-inspired optimization algorithm supported intelligent foraging behavior of honey bees (Karaboga&Akay 2009). ABC Algorithm may be a population-based optimization method, which is employed in problems where the group or the set of solutions is required to seek out. This algorithm is employed in many applications like electric power systems, parallel and grid computing, data clustering and image analysis, a computing application, signal processing, and communication. The colony of artificial bees consists of three groups: employed, onlookers, and scout bees. The employed bees randomly look for food source positions (solutions). Then, by dancing, they share information (communicate) that food source, like nectar amounts (solutions qualities), with the Onlooker bees waiting within the dance area at the hive. The duration of dance is proportional to the nectar's content (fitness value) of the food source being exploited by the employed bee. Onlooker bees watch various dances before choosing a food-source position, consistent with the probability proportional to the standard of that food source. Consequently, an honest food-source position attracts more bees than a nasty one. Onlookers and scout bees, once they discover a replacement food source position, may change their status to become employed bees. When the food-source position has been visited (tested) fully, the employed bee related to it abandons it, and should another time become a scout or onlooker bee. During a robust search process, exploration, and exploitation processes must be administered simultaneously (Kang *et al.,* 2009). Within the ABC algorithm, onlookers, and employed bees perform the exploration process within the search space, while scouts control the exploration process (Karaboga 2009). The goal of bees within the ABC model is to seek out the simplest solution. Therefore, the position of a food source represents a possible solution to the optimization problem, and therefore, the nectar amount of a food source corresponds to the standard (fitness) of the associated solution.

The sensor nodes are easily configurable to several specific applications. However, they're powered only by irreplaceable batteries with limited energy. Nevertheless, their processors have limited processing power, and therefore, the communication channels employed by the sensor nodes are usually in low bandwidths. By considering these constraints of sensor nodes, innovative techniques are required to enable communications. Not only communication is required, but also the network lifetime should belong to the maximum amount as possible within the applications of WSNs. Communication is the main factor of energy dissipation in sensor nodes. The dissipation depends on the space between communicating elements as source and destination. The sensing unit, processing unit, and transceiver unit on sensor nodes have also importance on energy consumption (Martin Enzinger 2012). Having limited sources necessitate energy-aware routing protocols running on the sensor nodes. The protocols running on these networks should be simple-structured, fast executable, and with low power for successful applications. Clustered routing mechanisms are particularly more suitable for wireless sensor networks with continued data flowing. In recent years, the routing protocols using swarm-based optimization algorithms present an alternate way of efficient data gathering techniques on sensor network 131 routings. The algorithms running on the nodes should be in simple forms providing fast execution and tiny energy consumption. Ant Colony Optimization (ACO) modeling ant's behavior of finding food sources may be a candidate method for multi-path routing employing a swarm-based algorithm to maximize network lifetime in event-based applications. Particle Swarm Optimization (PSO) simulates bird flocking which is employed to make clusters and to define cluster heads during a WSN. Honey-bees are among the foremost closely studied social insets. Their foraging behavior, learning, memorizing, and knowledge sharing characteristics have recently been one of the foremost interesting research areas in swarm intelligence. Artificial Bee Colony (ABC) algorithm is applied within the clustering of WSN.

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