



Swarm Intelligence

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Received: July 26, 2021

Published: September 01, 2021

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Nowadays, nature-inspired optimization algorithms are getting more and more attention. Swarm Intelligence is a group of nature-inspired searching and optimization techniques.

Swarm Intelligence (SI) studies collective intelligence of groups of individuals or agents. Collective intelligence is observed in social insects like bird flock, fish school, honey bees and ant colonies. Swarm has self-organizing behavior. The collective behavior is modeled in SI. Individuals or agents interact with each other directly or indirectly and carry out the coordinated and cooperative activities.

SI algorithms are based on a population of individuals/agents. These individuals indicate potential candidate solutions and cooperate among themselves. The solutions become better over iterations and then eventually find good enough solution.

Researchers from various fields are working on SI algorithms. Many swarm algorithms have been developed in recent years. Ant Colony Optimization, Particle Swarm Optimization, Artificial Bee Colony, Firefly Algorithm, Cuckoo Search, Bat Algorithm, Firework Algorithm, Bacterial Foraging, Cat Swarm Optimization and Artificial Immune System algorithms are some of the swarm intelligence algorithm.

The Swarm Intelligence algorithms are applied to solve optimization problems. These are good at solving problems, which are challenging to solve using the traditional methods. Besides the applications to conventional optimization problems, SI can be applied to a variety of fields in science and engineering.

Volume 3 Issue 10 October 2021

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