Investigation of Firefly Algorithm Including Slow Fireflies

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Summary

A swarm intelligence algorithms, as Particle Swarm Optimization (PSO) [1], Artificial Bee Colony (ABC) and so on, are based on the idealized behavior of animals and insects. These algorithms are efficient optimization algorithms because these algorithms have a deterministic component and a random component. In 2007, Mr. Yang had proposed Firefly Algorithm (FA) [2]. FA is based on the idealized behavior of the flashing characteristics of fireflies and is paid attention by many active researchers [3, 4]. In the conventional FA all fireflies are unisex. However in the nature, animals having variation among individuals have a greater chance of surviving than those without variation. In the case of solving optimization problems, we also consider that variation among individuals will lead to a variety of solutions. Therefore we have introduced a new improved FA including slow fireflies [5]. This algorithm has two type fireflies moving different speed and each firefly moves toward all more attractive fireflies. In our previous study, we have applied 28 benchmark functions introduced 2013 Congress on Evolutionary Computation (CEC). Numerical experiments have indicated that this algorithm is more effective algorithm than the conventional FA.

In this paper, our previous algorithm is investigated more detail. From numerical experiments, we find some important characteristic of our previous algorithm.

References


