Abstract: Cuckoo Search (CS) is a Meta-heuristic method, which exhibits several advantages such as easier to application and fewer tuning parameters. However, it has proven to very easily fall into local optimal solutions and has a slow rate of convergence. Therefore, we propose Modified cuckoo

2.2. The Disadvantages of the Cuckoo Search Algorithm

Cuckoo search algorithm has three major drawbacks.

1. Initialization
   Cuckoo search algorithm uses the random number to initiate these location of nests. Sometimes, the location of these nests will be the same, and sometimes the location of these nests are not properly dispersed in a defined area. Therefore, it causes repeated calculations and the easy chance to fall into local optimal solution [24].
2. Parameters α and p_a
   In most cases, Yang and Deb used $\alpha = O(L/10)$ or $\alpha = O(L/100)$, where L is the characteristic scale of the problem of interest [29]. Yang and Deb also suggested $p_a = 0.25$ [18]. In other words, α and p_a are fixed number. The properties of the two parameters are the shortcomings of the algorithm, because p_a and α should be changed with the progress of iterator, when CS algorithm search a local optimal solution and the global optimal solution.

3. Boundary issue
   CS algorithm uses Lévy flights and random walk to find nest location [18,30]. The locations of some nests may be out of the boundary; when this happens CS algorithm uses the boundary value to replace these location. The bound dealing method will result in a lot of nests at the same location on the boundary, which is inefficient.