

# 基于二次飞行和随机扰动的改进蝙蝠算法

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**摘 要:** 针对基本蝙蝠算法存在着不易跳出局部寻优、搜索精度低等问题, 提出了二次飞行和随机扰动的改进策略. 每只蝙蝠对自身位置进行随机扰动后, 对上代速度采用自适应学习权重, 使蝙蝠能够趋好避坏地进行飞行搜索; 为了保证种群多样性, 对种群中最差的一部分蝙蝠进行惩罚, 舍弃对上代速度的学习, 进行二次飞行搜索, 提高算法的全局搜索能力. 通过对七个典型不同类型的基准函数进行实验测试, 结果表明了改进策略对算法的优化精度和全局搜索能力有很大的提高, 使改进的算法拥有更好的收敛速度和寻优精度.

**关键词:** 蝙蝠算法; 二次飞行; 随机扰动; 自适应学习权重

## An Improved Bat Algorithm Based on Second

### Flight and Random Disturbance

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**Abstract:** In order to overcome the shortcomings of conventional the basic bat algorithm (BA), such as easily trapping in local optima and lower search accuracy, this paper proposed the improvement strategy based on the second flight and the random disturbance. After each bat makes a random disturbance to its position. Using the adaptive weight learning the previous flight speed, so that bats can search in a good direction to avoid a bad direction. In order to ensure the diversity of the population, there is a punishment of the improved algorithm for the worst part to carry out a second flight search without learning last speed. This improves the global search ability of the improved algorithm. The algorithm tested on seven distinct types of benchmark functions. The results show that the improved strategy has a great improvement on the optimization accuracy and global search ability. The proposed algorithm has a better convergence rate and optimization accuracy.

**Key words:** bat algorithm(BA); second flight; random disturbance; adaptive learning weight

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