一种改进的自适应混合型蝙蝠算法

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摘要： 针对基本蝙蝠算法（BA）存在的寻优精度不高，易出现早熟收敛等缺陷，本文提出了一种改进的自适应混合型蝙蝠算法（YSBA）.首先，该算法舍弃了速度这一参数，简化了计算；其次，加入位置收缩因子β，用来控制与约束蝙蝠的位置，平衡蝙蝠算法中局部和全局搜索，提高算法的寻优精度，最后，重新设置了响度 A 和脉冲频率 r 的计算方法，此方法可以也可以避免陷入局部最优.最后通过 11 个典型的基准函数优化试验，与基本蝙蝠算法（BA）以及采用机动飞行的蝙蝠算法（MFBA）相比，发现改进的自适应混合型蝙蝠算法能够解决局部过分搜索的问题，避免陷入局部最优值，具有较高的计算精度.
关键词： 蝙蝠算法；收缩因子；优化函数；全局优化

An Efficient Adaptive Improved-bat Algorithm

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Abstract： Aiming at the existence of basic bat algorithm (BA) optimization accuracy is not high, traps into local optima easily. This paper presents a new improved bat algorithm, which is named YSBA. In this algorithm, firstly, to simplify the calculation and improve the convergence speed, a new search equation is proposed in generate new solutions. Secondly, location constrict factor is added, which can be used to control with the location of the bats, balance the global and local search of bats and improve the optimization precision of the algorithm. Finally, reset the method of the calculation of loudness and rate, which can also be used to avoid trapping into local search. To verify the performance of our algorithm, 11 typical experiments are employed. The experimental results show that the new algorithm (YSBA) is significantly improved, which includes optimization accuracy, convergence speed, and they can also avoid falling into a local optimum.
Key words： Bat-inspired Algorithm, Gauss mutation, Lévy flights, global optimization

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