改进的变步长果蝇优化算法

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摘要： 为了克服基本果蝇优化算法(FOA)在求解全局优化问题时所存在的寻优精度不高，收敛速度较慢，易陷入局部最优等问题，提出了改进的变步长果蝇优化算法，在基本果蝇优化算法位置移动公式中，该算法利用指数分布来增强算法的全局探测能力；同时利用步长递减模式来增强算法后期的局部优化能力，有效地权衡了算法全局与局部寻优性能.选取 6 个基准函数将本文算法与另外两种改进的果蝇算法以及原果蝇算法进行对比，实验结果证明，新改进的算法能够跳出局部最优，提高了算法的收敛速度和寻优精度.
关键词： 果蝇优化算法；全局优化；寻优精度；收敛速度；指数分布

An Improved Fruit Fly Optimization with Changing Step

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Abstract： In order to overcome the basic Fruit Fly Optimization Algorithm(FOA) in solving global optimization problems，precision is not high，slow convergence speed and easily falling into the master problem，an improved Fruit Fly Optimization Algorithm with changing step is proposed. In this paper，Exponential Distribution can be used to enhance the exploration ability of the algorithm. At the same time，decreasing step size can be used to enhance the local optimization ability of the algorithm. This improvement achieves the equilibrium between global and local optimizations effectively. This algorithm is compared with other two improved FOA algorithms and the original FOA algorithm on 6-benchmark functions，the experimental results demonstrate that the new algorithm can jump out of local optimal, then the convergence rate and the precision of the Fruit Fly Algorithm can be improved significantly.
Key words： fruit fly optimization algorithm; global optimization; convergence precision; convergence speed; exponential distribution

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