عنوان مقاله:

Improved L-SHADE using an alternative parameter adaptation approach and advantage of historical experiences

محل انتشار:

کنفرانس ملی آخرین دستاوردهای مهندسی داده و دانش و محاسبات نرم (سال: 1400)

تعداد صفحات اصل مقاله: 10

نویسندگان:

Esmaeil Mirkazehi Rigi - *Faculty of computer sciences University of sistan and Baluchsetan Zahedan, Iran*

Amin Rahati - *Faculty of computer sciences University of sistan and Baluchsetan Zahedan, Iran*

خلاصه مقاله:

L-SHADE algorithm is an improved version of DE,which incorporates success-history based parameter adaptation with linear population size reduction. It is able to successfully and efficiently solve numerical optimization problems. In this paper, an extension of L-SHADE using an alternative adaptation approach for control parameter setting and advantage of historical experiences (HALSHADE) is introduced. The proposed evolutionary algorithm aims to enhance the overall performance of L-SHADE, yet simple. Hence, in the adaptation of control parameters phase, population size, which was previously adjusted based on linear reduction strategy, here also is taken into account search state of the algorithm. Besides the adjustment of the control parameters in terms of search behavior, linearly decreasing procedure during generations is also used as well as,for scaling factor, semi-adaptive approach is applied. Also, the memories updating process is modified. Those hold successful scaling factor and crossover rate values in the past and afterward those are used for generating new values ones. In the mutation phase, selection procedure of better individuals is dynamically adjusted along with generations for guidance other individuals. In addition, useful historical experience is used to guide individuals toward promising directions. The performance of HALSHADE is tested on CEC ۲۱۰۷ benchmark functions, and then it is compared with state-of-art variants of L-SHADE, which have successfully solved these problems. The experimental results indicate which proposed HALSHADE is quite competitive in terms of .solution accuracy and robustness compared to other L-SHADE-based algorithms

کلمات کلیدی:

.Differential Evolution, L-SHADE, Parameter adaptation, mutation, CEC ۲۰۱۷