



On Efficient Chaotic Optimization Algorithm Based on Partition of Data Set in Global Research Step

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Abstract: The great difficulty facing the optimization algorithms is the easiness of trapping into local optima. Many researchers have benefited from the good characteristics of chaotic mappings to overcome this difficulty, but for some complex functions the problem persists. In this paper, we attempt to avoid this problem by proposing a new chaos optimization technique based on partition of data set in global research step. The numerical results show that the proposed algorithm provides the best results as compared to other ones.

Keywords: *chaos optimization; test functions; probability density function; Lozi map.*

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1 Introduction

Chaos theory has been successfully developed since its early years through wide applications in other sciences such as physics, mechanics, electronics, biology, economy, astronomy, meteorology, optimization, secure communication, ... etc [1–7]. As far as optimization problems of some usual functions that are continuously differentiable are concerned, some traditional optimization algorithms such as the Newton method, the gradient method and the Hessians method [8, 9] can get their global optimal points with the advantage of speed convergence and high precision. However, these traditional optimization algorithms will easily trap into local optimum when solving optimization problems of some multi-modal functions.

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