

## Accepted Manuscript

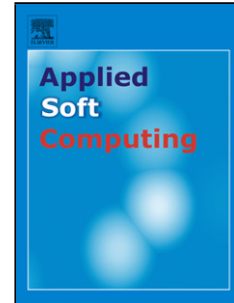
Title: Cat Swarm Optimization with Normal Mutation for Fast Convergence of Multimodal Functions

Authors: Lakshman Pappula, Debalina Ghosh

PII: S1568-4946(18)30071-1  
DOI: <https://doi.org/10.1016/j.asoc.2018.02.012>  
Reference: ASOC 4704

To appear in: *Applied Soft Computing*

Received date: 4-9-2014  
Revised date: 9-2-2018  
Accepted date: 11-2-2018



Please cite this article as: Lakshman Pappula, Debalina Ghosh, Cat Swarm Optimization with Normal Mutation for Fast Convergence of Multimodal Functions, Applied Soft Computing Journal <https://doi.org/10.1016/j.asoc.2018.02.012>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

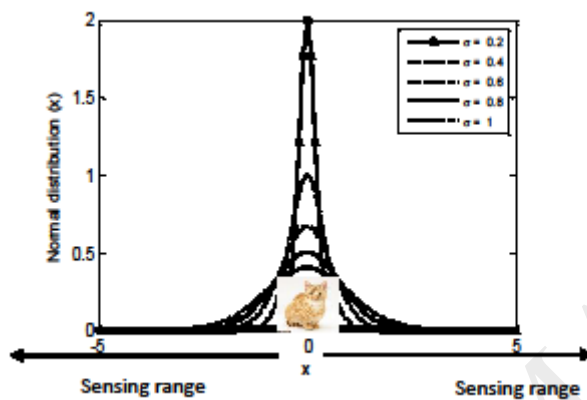
# Cat Swarm Optimization with Normal Mutation for Fast Convergence of Multimodal Functions

Lakshman Pappula\*, Debalina Ghosh

*School of Electrical Sciences, Indian Institute of Technology Bhubaneswar  
Odisha, India-751013*

\*Corresponding author e-mail address: lp10@iitbbs.ac.in

Graphical abstract



## Highlights

- A normal mutation strategy based cat swarm optimization is proposed to solve complex multimodal problems.
- Sixteen test functions are used to evaluate the accuracy of the proposed method.
- The proposed method provides the global optimum for most of the multimodal problems with faster convergence rate.
- The experimental results illustrate that the proposed method is quite superior to some of the state of the art evolutionary algorithms.
- The proposed method works well for the higher dimensional problems also.

**Abstract**— A normal mutation strategy based cat swarm optimization (NMCSO) that features effective global search capabilities with accelerating convergence speed is presented. The classical CSO suffers from the premature convergence and gets easily trapped in the local optima because of the random mutation process. This frailty has restricted wider range of applications of the classical CSO. To overcome the drawbacks, the normal mutation is adopted in the mutation process of this paper. It enables the cats to seek the positions in better directions by avoiding the problem of premature convergence and local optima. Experiments

Download English Version:

<https://daneshyari.com/en/article/6903995>

Download Persian Version:

<https://daneshyari.com/article/6903995>

[Daneshyari.com](https://daneshyari.com)