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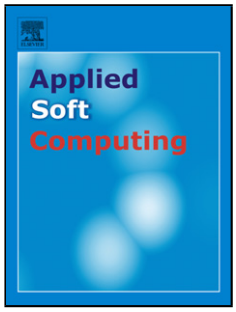

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Authors: Lakshman Pappula, Debalina Ghosh

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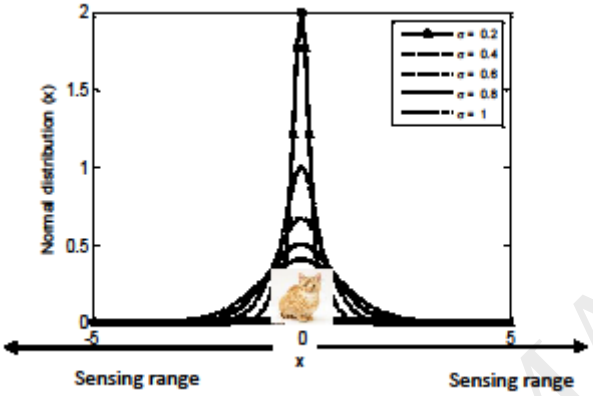
Cat Swarm Optimization with Normal Mutation for Fast Convergence of Multimodal Functions

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

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