Gmail Takuya Iwase <tanu.z0uz0u@gmail.com>

EvoCOP19 Status of paper 39

1 件のメッセージ

EvoCOP19 <evocop19@inria.fr> 2019年1月12日 4:45
返信先: arnaud.liefooghe@univ-lille1.fr
To: tanu_iwa@cas.lab.uec.ac.jp
Cc: evocop19@inria.fr

Dear Takuya Iwase, Ryo Takano, Fumito Uwano, Hiroyuki Sato, Keiki Takadama

We regret to inform you that your paper entitled "Niche Radius adaptation in Bat Algorithm for Capturing Multiple Global Optima in Multimodal Functions", submitted to the EvoCOP19 conference, has not been accepted for inclusion in the conference programme and proceedings. Below, you will find attached the reports of the reviewers. We hope that you will find them useful.

We thank you for your interest in EvoCOP19. You are cordially invited to participate in EvoCOP19. The EvoCOP19 website will soon provide all the necessary information for conference registration and hotel accommodation.

Best regards,
Arnaud Liefooghe and Luís Paquete
EvoCOP19 chairs
http://www.evostar.org/2019/
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Reviewer: 1

Originality : Below average
Quality : Below average
Relevance : Fair
Presentation : Fair

Summary: The author proposes a bat algorithm to find multiple local optima in multimodal optimization. The algorithm uses niche radii to control and modify the search space of solutions to avoid overlapping the found optima.

Details: The main problems with the paper are: i) that the authors compare their algorithm only with the original bat algorithm and not any other algorithm to find several optima for for multi modal functions and ii) there already exists improved bat algorithms for the purpose of finding several optima for multi model functions (e.g. M. Jamil, H.-J. Zepernick, X.-S. Yang “Multimodal Function Optimization Using an Improved Bat Algorithm in Noise-Free and Noisy Environments” Nature-Inspired Computing and Optimization, 29-49, 2017) but these papers are not even mentioned

The paper contains several language errors. Examples: Abstract: “BA is consist of”, Section 1, line 7 “have proposed in”

It is not mentioned in the text who has proposed the bat algorithm described in Section 2 (even though the paper of Yang 2010 can be found in the references).

Candidate for the best paper award? : No

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Reviewer: 2

Originality : Weak
Quality : Fair
Relevance : Weak
Presentation : Fair

Summary: Authors report on a modification of BAT algorithm that doesn't work well.

Details: First: It doesn't appear to be related to combinatorial optimization.

But then: Independently, authors propose a modification of the BAT algorithm without explaining first why and where BAT algorithm needs to be modified. Then, the proposed modification steps are taken from literature, now just applied to BAT algorithm. The demonstration is done by showing 4 randomly(?) taken functions from CEC13 competition, where the proposed algorithm miserably fails for one performance measure - nevertheless, authors still see it as a success story. Comparison is only done against unmodified BA, so why not the CEC13 winner, or at least a strong candidate from the competition?

Candidate for the best paper award? : No

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Reviewer: 3

Originality : Fair
Quality : Weak
Relevance : Fair
Presentation : Very Weak

Summary: The paper presents an extension of a bat algorithm (BA) with a niche radius strategy. Niching strategies are typically used with evolutionary methods to maintain diversity within a population.

The method starts by initializing a population of solutions with size N. At each iteration, each solution i, i=1,...,N, is updated according to a frequency f_i and velocity v_i. After that, two aditional solutions are generated: one is a random neighbor of the current solution, and the other is a random neighbor of the best-known solution within the radius. New solutions are accepted with probabilities A_i. The computational experiments considered part of the benchmark proposed for the CEC 2013 Special Session and Competition on Niching Methods for Multimodal Function Optimization. The results showed that the standard BA achieved better peak accuracy on average, while the proposed Niche Radius Bat Algorithm (NRBA) achieved better peak ratio, on average.

Details: As a general comment, the paper was difficult to read due to several grammatical errors throughout the text. The authors should dedicate more effort into polishing the text before publishing it.

Furthermore, the authors should focus on motivating the usage of BAs, citing other relevant papers that successfully used the method, and comparing their results to the literature. I suggest putting more effort into considering more benchmark functions and more values for level of accuracy (epsilon) in such a way that the authors would be able to compare their method to those in the CEC competition.

More specific comments:
- Section 3.1 is very confusing and fails to present what niching and niche radius are. The paper would greatly benefit from a detailed explanation.

- The descriptions of the benchmark functions are in [11], it is not necessary to repeat them. Sections 1 to 3 could be expanded with the space saved.

- Since the method has quite a few parameters, the authors should mention the calibration process.

- Report the computer that was used and the average runtimes as well. Do BA and NRBA have similar runtimes? How do they compare to the literature? Furthermore, use statistical tests to compare the methods.

- The paragraph regarding future work is too vague.

Corrections:
Page 1:
- DE hasn't been introduced before.

Algorithm 1:
- Line 8: x_i -> x* (since it is supposed to be the global best solution).
- Line 11: forgot to close parenthesis for min(...).
- Line 14 should be outside the for loop

Algorithm 2:
- The text says x_loc is generated around the best solution within the radius, while the algorithm says it is generated around the global best-known solution.

- The textual description after Algorithm 2 references the incorrect equations.

Conclusions:
- "The results show that NRBA performed better than BA because..." -> "The results showed that NRBA performed better than BA regarding peak ratio because..."
- Figure 7 is not mentioned in the text.

References:
- Some references are not properly formatted.

Candidate for the best paper award? : No

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Reviewer: 4

Originality : Fair
Quality : Very Weak
Relevance : Below average
Presentation : Weak

Summary: This paper tries to improve the Bat algorithm by augmenting it with a niching technique called niche radius adaptation. This algorithm is compared to the original Bat algorithm on 4 test functions using 2 performance indicators. Mean values across 30 runs are compared and the proposed approach is better for one of the indicators but not the other.

Details: While the bat algorithm may seem like a worthwhile optimization algorithm to the novice optimization researcher because of its 2000+ citations on Google Scholar, it is one of the many misguided attempts at creating "novel" metaheuristics based on a poor grasp of both animal behavior and the state-of-the-art in metaheuristic optimization. Indeed the original Bat algorithm paper drowns the reader in a pseudo-scientific metaphor that obfuscates the behavior of the algorithm and has little basis in bat behavior (compare for instance with the descriptions given by "Ghose K, Horiuchi TK, Krishnaprasad PS, Moss CF (2006) Echolocating Bats Use a Nearly Time-Optimal Strategy to Intercept Prey. PLoS Biol 4(5): e108. https://doi.org/10.1371/journal.pbio.0040108" and "Bar NS, Skogestad S, Marcal JM, Ulanovsky N, Yovel Y (2015) A Sensory-Motor Control Model of Animal Flight Explains Why Bats Fly Differently in Light Versus Dark. PLoS Biol 13(1): e1002046. https://doi.org/10.1371/journal.pbio.1002046"). An indepth criticism of the trend towards ill-informed metaphors can be found in "K. Sorensen, Metaheuristics—the metaphor exposed, International Transactions in Operational Research, p. 1--16, 2013 https://doi.org/10.1111/itor.12001". With reference to the original bat algorithm, it is also important to note that it was only tested on 10 test functions and compared to an untuned simplistic GA and PSO algorithm in order to show that it was worth something.

The current paper therefore stands on very shaky ground. The evaluation of the proposed algorithm leaves a lot to be desired: only 4 test functions are considered, it is only compared to the original bat algorithm and no statistical hypothesis testing is performed. The results themselves are not that convincing either, with improvement only in one of the 2 indicators considered. The paper also contains a number of typos and difficult-to-parse sentence structures.

Candidate for the best paper award? : No