An Ocean of Opportunities in Artificial Human Optimization Field

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"Great LEADERS don't tell you what to do. They show you how it's done" – From Internet

ABSTRACT

Global Optimization Techniques like Genetic Algorithms, Particle Swarm Optimization, Ant Colony Optimization and other optimization techniques were used in literature to solve complex optimization problems. Many optimization algorithms were proposed in literature by taking the behavior of Birds, Ants, Fishes, Chromosomes etc. as inspiration. Recently, a new trend has begun in Evolutionary Computing Domain where optimization algorithms have been created by taking Human Behavior as inspiration. The focus of this paper is on optimization algorithms that were and are being created based on the behavior of Artificial Humans. In December 2016, a new field titled "Artificial Human Optimization" was proposed in literature. This paper is strongly meant to popularize "Artificial Human Optimization" field like never before by showing an Ocean of Opportunities that exists in this new and interesting area of research. A new field titled "Artificial Economics Optimization" is proposed at the end of paper.

Keywords: Artificial Intelligence, Machine Learning, Evolutionary Computing, Bio-Inspired Computing, Nature Inspired Computing, Genetic Algorithms, Particle Swarm Optimization, Ant Colony Optimization, Artificial Economics Optimization, Artificial Human Optimization

1   Introduction

Article [1] proposed a new field titled "Artificial Human Optimization (AHO)" by showing 13 abstracts of papers in this new and interesting area of research called as AHO field. Article [2] showed different reviews of experts for a particular work in AHO field. Article [3] proposed new optimization method titled "POSTDOC : The Human Optimization" which comes under AHO field. Article [4] popularized AHO field by "showing few opportunities in AHO field", "proposing Multiple Strategy Human Optimization method", "showing reviews for paper – POSTDOC: The Human Optimization", "making corrections to earlier work", "encouraging researchers to work in this new area" and "giving Artificial Human Optimization Award to researchers who worked in this new area".

In this article, Section 2 shows reviews of papers in Artificial Human Optimization field. The reviews shown in article [4] are the reviews of a particular paper titled "POSTDOC: The Human Optimization". In this article, reviews of other papers proposed in AHO field are shown.

Section 3 in this article shows many opportunities that exist in this new area of research. Section 4 shows "Doctor of Philosophy (PhD)" proposal in Artificial Human Optimization area.

In this article, Section 5 shows future work where a new field titled "Artificial Economics Optimization (AEO)" is defined. This section also shows some of the opportunities that exist in AEO area. Acknowledgements are shown in Section 6 of this Article.

2   Reviews

2.1   Review 1

We had a glance at your published article "POSTDOC : THE HUMAN OPTIMIZATION". We found your article very **innovative, insightful and interesting**. We really value your **outstanding contribution** towards Scientific Community.

2.2   Review 2

The author have come up with **a new approach** of academia; Philosophy Of a Doctor (PoD) – A New Degree. I am not expert in this area and would suggest to send the work to some academic. I think this is not a suitable workshop for such work. It should be send to some academic workshop/conference/journal.

2.3   Review 3

Literature review: **very good**.

Experiments: None.

Overall a **good writing** but check if it is in the scope of the conference of PAKDD!

2.4   Review 4

The author, Satish Gajawada has proposed a new area Artificial Human Optimisation – An Introduction. The author has proposed an optimisation algorithm but there has been no application used to test the algorithm or the optimisation method on. More experiments are required. Also its not related to data mining and not in the scope of PAKDD or BDM.

2.5   Review 5

The author note" This article got recently published in "Transactions on Machine Learning and Artificial Intelligence". I have copyrights with me. I am submitting this paper for re-publishing in your workshop in an attempt to popularize "Artificial Human Optimization" like never before." suggests that the work is already published so there is not point accept him for re-publication since the proceedings of this workshop will be published. **New and interesting area though.**

2.6   Review 6

We are very happy to inform you that your paper has been accepted (conditionally) for publication in journal. Our journal is a prestigious journal and it will be indexed in major indices ASAP. Please modify your paper based on reviewers comment, otherwise it will not be accepted for publication.

Type of paper : Research

Significance of the main idea(s) : Average

Originality : Average

Technical quality of the paper : Average

Awareness of related work : Average

Clarity of presentation : Average

Organization of the manuscript : Very Poor

References : Average

Paper Length : Average

How comfortable are you in reviewing this paper? : Confident

Overall comments and changes that MUST be made before Publication: The manuscript is not organized. The presentation is not clear.

Overall Recommendation: Marginally Accept.

2.7 Review 7

The Paper captioned "Ph.D: The Human Optimization" presented by the author has been reviewed in detail by the reviewers and found it a distinctive effort. Reviewers offer following remarks:

The paper is **strongly prepared** to provide technical grounds of the subject. The Introduction elucidates the essence of the proposed research. Besides, Literature Review carefully outlined with details focused on the current applicable methods.

The author intelligently developed the remaining part of the manuscript communicating the commitment and the pragmatic knowledge of the writer. The mathematical expressions were also strongly used to defend the current work. The methodology adopted showed proper evaluation and documentation. In this manner, it is acknowledged for publication as it is.

2.8 Review 8

The paper "Scientist: International Association of Artificial Human Optimization" developed generously that shows the technical grounds of the subject. The technical expertise has been greatly utilized in developing the paper under review. The Introduction endorsed systematically the extensive areas of the new study approach. Besides, Literature Review well explains and advocates the probe and gaps in this area of research. The author skillfully produced the rest of the manuscript exploring in depth this newly proposed area. Moreover, the optimization method is well devised and the reviewer's comments on previous work are also commendable. In this manner, it is acknowledged for publication as it is.

2.9 Review 9

The Paper captioned "Hero: Transactions on Artificial Human Optimization" has been carefully reviewed by the authorities and declared it a well-composed paper. Reviewers offer following remarks:

The abstract focused on the rationale of the research in a logical way that seems to be a unique angles of the study. The Introduction of the paper well argued the true methodology of the research. Moreover, Literature review is carefully organized, covers the available methods with suitable details. Rest of the manuscript gradually covers the focused point of view that shows the applied knowledge of the authors. The paper also presents the relevant mathematical details with sufficient reference to the existing work. The methodology adopted showed proper evaluation and documentation. Therefore, it is accepted for publication as it is.

2.10 Review 10

The article contributes greatly on the areas of Artificial Intelligence. Researcher excellently worked on the area of study. Collectively, it is a great effort and the reviewers provided following comments about the manuscript. Abstract covers all the important aspects of the proposed methodology and well written in general. The essence of the presented approach is elaborated nicely in the Introduction section. Similarly, Literature review is organized well. Rest of the manuscript is also very well structured representing the dedication and knowledge of the researcher about the topic and skill on research. The manuscript shall be rated high on its technical quality. Therefore, manuscript shall be accepted for publication as it is.

2.11 Review 11

The Paper captioned "Artificial Human Optimization –An Introduction" has been wisely appraised by the authorities and declared it a well-conceived paper. Reviewers offer following remarks:

The abstract previews the author's approach and improved theories of the study that definitely yet to be explored and never produced before. The research procedure as described in the Introduction is exemplary. Moreover, Literature review is best framed, focus the information on the potential approaches with applicable facts. Rest of the manuscript gradually covers the ideal point of view that shows the applied knowledge of the authors. The paper also presents the relevant mathematical details with sufficient reference to the existing work. The methodology adopted showed proper evaluation and documentation. Therefore, it is accepted for publication as it is.

2.12 Review 12

Information for the Contribution

1. Writing Skill and Quality (0-10): 8

2. Quality of content (0-10): 8

3. Fitness of title (0-10): 9

4. Significance for theory or practice (0-10): 9

5. Contribution and Originality (0-10): 9

6. Level of Innovation (0-10): 8

7. Quality of presentation (0-10): 8

8. Ripple effect to other authors (0-10): 10

9. Decisive overall recommendation (0-10): 9

In this paper the author clearly explains the research with effective method and good description. The topic is meaningful, and the research results are interesting to many specialized readers. So it's good work and acceptable.

Some more checkpoints for improving the quality of the final version (if need, author can pay attention to below checkpoints. It's not requirements but just comments for improving the paper)

- In abstract and Introduction, if need, the main goal can be say more clearly.

- The abstract can shows some information to understand the goal of this paper clearly, if need.

- The introduction can be emphasized the background and motivation more clear way.

- the results need reflect more clear explanation.

- Are there any not good phrases?, if so the authors need to pay attention to them.

- Are there any typos? If so, it need to be revised.

- Although paper is good from language point of view, but a little bit review towards sentences and/or grammars can turn it into beautiful paper.

- In conclusion, should elaborate why the study is important and the significance of the study more clearly.

-Overall, it's **very interesting** and the work proposed is useful, the paper is organized well and the presentation is clear.

3   Ocean of Opportunities

From previous section, it is clear that sme world-class experts have accepted the fact that Artificial Human Optimization is very interesting area of research. As shown in Article [4], there are also set of world-class experts who are against to the idea of Artificial Human Optimization.

Artificial Human Optimization field is in its early stage. The field got created in December 2016. There are literally so many opportunities in AHO field. New research papers can be published by replacing the optimization algorithm (like Genetic Algorithms, Particle Swarm Optimization, Ant Colony Optimization etc.) used in the published paper with algorithms in AHO field. Satish Gajawada et al. published nearly 10 papers using algorithms based on optimization algorithms like GA, PSO and DE. In this section titles of papers based on algorithms in AHO field are shown. The below given research paper titles are not published yet. The below titles of papers are future opportunities for researchers interested to work in AHO field:

1) Optimal Clustering Method Based on algorithms under AHO field [6].
2) Projected Clustering Using HPSO algorithm [7].
3) HBBO Based Projected Clustering Method [8].
4) Projected Clustering HPSO and Classification [9].
5) A Method of Initialization for HPSO Based Clustering Technique [10].
6) Supervised Projected Clustering Method Based on HBA algorithms [11].
7) Design optimization of non linear tapers for high power gyrotrons using hybrid Human Behavior Algorithms and space mapping methods [12].
8) A Semi-Supervised Projected Clustering Method Using HBBO [13].
9) A framework for classification using Human Behavior Algorithms based clustering [14].

HBBO, HBA, HPSO in above paper titles are algorithms under Artificial Human Optimization field. Details of these algorithms are given in Article [4]. A total of 15 papers under AHO field are shown in [4].

The above new project titles / research papers to be published are just research opportunities based on Satish Gajawada et al. authors. Imagine the number of new projects that are possible based on previous papers of crores of researchers across the globe. There are millions of papers possible because there are so many papers published based on optimization algorithms like GA, PSO, DE and other optimization algorithms.

Besides new projects/papers there is possibility for so many associations, organizations and research labs across the globe. Few examples are shown below:

1) IIT Roorkee Artificial Human Optimization Lab

2) IEEE Artificial Human Optimization Society.

3) Indian Journal of Artificial Human Optimization.

There are so many possibilities to create new AHO associations, AHO journals, AHO conferences, AHO research labs and AHO societies etc.

Hence there is an Ocean of Opportunities in Artificial Human Optimization field.

4   Doctor of Philosophy Proposal

This proposal is meant for students who are interested to do "Doctor of Philosophy (PhD)" in Artificial Human Optimization.

"Optimization Algorithms based on Human behavior" is the title of the work.

Article [5] proposed HPSO algorithm which is the inspiration of this PhD proposal.

The description of HPSO algorithm is taken from Article [5] as it is and shown below in double quotes:

"HPSO is modified PSO, based on human behavior, which is proposed to improve the performance. In PSO, all particles only learn from the best particles Pbest and Gbest. Obviously, it is an ideal social condition. However, considering the human behavior, there exist some people who have bad habits or behaviors around us, at the same time, as we all known that these bad habits or behaviors will bring some effects on people around them. If we take warning from these bad habits or behaviors, it is beneficial to us. Conversely, if we learn from these bad habits or behaviors, it is harmful to us. Therefore, we must give an objective and rational view on these bad habits or behavior. In HPSO, we introduce the global worst particle, who is of the worst fitness in the entire population at each iteration. It is denoted as Gworst."

We can add human behavior to existing algorithms like Genetic Algorithms, Ant Colony Optimization etc. and create algorithms like "Human Behavior Inspired Genetic Algorithms".

In HPSO, Worst particle is introduced. Similarly we can add human behavior to existing algorithms. We can then see results without adding human behavior and results after adding Human behavior.

5   Future Work

"Artificial Economics Optimization" is a new field where algorithms are created by taking "Economics" as inspiration. Following are some of opportunities that exist in "Artificial Economics Optimization" field:

1) International Association of Artificial Economics Optimization (IAAEO)

2) Transactions on Artificial Economics Optimization (TAEO)

3) International Journal of Artificial Economics Optimization (IJAEO)

4) International Conference on Artificial Economics Optimization (ICAEO)

5) www.ArtificialEconomicsOptimization.com

6) B.Tech in Artificial Economics Optimization

7) M.Tech in Artificial Economics Optimization

8) PhD in Artificial Economics Optimization

9) PostDoc in Artificial Economics Optimization

10) Artificial Economics Optimization Labs

11) To become "Father of Artificial Economics Optimization" field

6   Acknowledgements

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