AI COMMENTS

# REVIEWER 1

## 1. COMMENT

I do not get the notation with an arrow above some parameters, do they mean a vector? Then maybe simply a bold font would be appropriate? Of course an arrow above a variable means a vector but rather as a Euclidean vector and it seems to not fit in this meaning. Besides g in eq. (3) seems to also be a vector, why it does not have an arrow? Please go through the equations and correct this issue.

## RESPONSE

We have add arrows in each vector of the manuscript to clarify this.

## 2. COMMENT

c\_i is not a "so-called center", it does not explain what it actually is, so please clarify it. Similar E in equation (3) is not a "so-called" training error, it is simply a loss function or training error.

## RESPONSE

a)

b)

## 3. COMMENT

The section 2.1 starts with the sentence: "Grammatical evolution is a genetic algorithm where the chromosomes stand for the production rules of any given BNF (Backus–Naur form) grammar[47]."  
It is confusing for so many reasons. Please explain at first what are genetic algorithms.

## RESPONSE

**(References to genetic algorithms ?)**

## 4. COMMENT

Figure 1 has a caption above the Figure, while it should be belowe, but first of all I do not understand it, should it explain anything?

## RESPONSE

a) We have converted it to algorithm, since it is more suitable for this kind of information.

b) The caption has been changed to “*The BNF grammar used in the current work, to produce intervals for the RBF parameters. By using this grammar in the first phase of the proposed procedure, the optimal interval of values for the parameters of the neural network will be identified*”

## 5. COMMENT

What does % mean in Tab. 1? Is it also a mod function?

## RESPONSE

Yes, you are correct. We have replaced the % with the mod function.

## 6. COMMENT

Results do not seem "promising" as promised in the Abstract... Table 3 and 5 gives results in %, Table 4, also? What does the datasets contain? Maybe, because Authors use so many datasets it would be appropriate to describe those a bit more, give some examples? After reading the paper I am still confused with its contents. I understand a little bit what was done, but not enough. Authors write about RBFNN, but there is no NN in this paper described, no structure, no training. I also do not understand what was achived in the paper.

## RESPONSE

a) As we mention in Abstract the reduction in terms of test error is about 30-40% for the classification datasets and more than 50% for the regression datasets. For this reason we present the average results on a separete row for every experimental table.

b) Tables 5 and 7 (we have added two additional tables in the manuscript) provide experimental results for the classification datasets, where we measure the average classification error. We also mention in these captions the followin: *“Every number in cells denotes average classification error as measured on the test set”*

c) The classification datasets as well as the regression datasets have been moved to tables for better readability (subsection 3.1)

# REVIEWER2

## 1. COMMENT

The contribution of the current study must be briefly discussed as bullet points in the introduction. And motivation must also be discussed in the manuscript.

## RESPONSE

## 2. COMMENT

The introduction section must discuss the technical gaps associated with the current problem.

## RESPONSE

## 3. COMMENT

Figure 1 should be converted to plain text (poor sharpness, and the text is not a drawing).

## RESPONSE

a) We have converted it to algorithm, since it is more suitable for this kind of information.

b) The caption has been changed to “*The BNF grammar used in the current work, to produce intervals for the RBF parameters. By using this grammar in the first phase of the proposed procedure, the optimal interval of values for the parameters of the neural network will be identified*”

## 4. COMMENT

In the "References" section the authors should add DOIs for all papers.

## RESPONSE

# REVIEWER3

## 1. COMMENT

It is suggested to organize the experimental datasets in a table for better readality.

## RESPONSE

The classification datasets as well as the regression datasets have been moved to tables for better readability (subsection 3.1)

## 2. COMMENT

When comparing with artificial neural networks, why limits the number of hidden nodes to 10? What if we use an optimized set of hyper-parameters for an ANN?

## RESPONSE

**(Experiments with more hidden nodes?)**

## 3. COMMENT

What's the advantage of the proposed RBF network against other neural networks?

## RESPONSE

**(Why RBF? →Wikipedia maybe?)**

## 4. COMMENT

Please analyze the computational complexity of different comparative models.

## RESPONSE

**(TIME GRAPH? For some datasets?)**

# REVIEWER4

## 1. COMMENT

In the first place, the abstract is a little thin and doesn't fully show the interesting results from the main paper. I would encourage the authors to extend the abstract more with the key results.

## RESPONSE

**(Extend abstract)**

## 2. COMMENT

The importance of the design carried out in this manuscript can be explained better than other important studies published in this field. I recommend that the authors review other recently developed works in the section on introduction.

## RESPONSE

## 3. COMMENT

In the introduction section, some recent related work on the topics of advanced machine learning models should be strengthened. recent investigations are recommended for the author’s references, i.e., "10.1016/j.eswa.2021.115982 "; "10.1016/j.ast.2023.108325".

## RESPONSE

## 4. COMMENT

In Section 3.2, it is mentioned that the proposed method performs well; however, the performance of the compared methods (i.e. RPROP, ADAM, NEAT) varies greatly. It is recommended that the author provide a solid comparative study by providing a detailed description of these compared methods.

## RESPONSE

**(Time experiment, experiment with more number of nodes)**

## 5. COMMENT

It is recommended that the author add pictures comparing the optimization and iteration process of the proposed algorithm with those in the literature to intuitively discover the superiority of the proposed method.

## RESPONSE

We have the flowchart of the algorithm in Figure 3, for better understanding of the optimization process.