Comments for ai-2642202

# Reviewer 1

## 1. Comment

An explanation of the effectiveness and characteristics of the proposed

## Response

**(motivation of the paper)**

## 2. Comment

Suggest using a flowchart to illustrate the method for readers to understand

## Response

**(Na ginei flowchart tou algorithmou)**

## 3. Comment

Add a comparison with existing methods to illustrate their advantages

## Response

# Reviewer 2

## 1. Comment

The abstract must be re-written, focusing on the technical aspects of the proposed model, the main experimental results, and the metrics used in the evaluation. Briefly discuss how the proposed model is superior.

## Response

**(Na grafei pali to abstract kai na mpoune ta pleonektimata tis texnikis kai apotelesmata kiolas)**

## 2. Comment

A methodological manuscript, like the current one, must formulate what problem needs to be solved and why existing techniques are insufficient. Why not Autoencoders or Variational Autoencoders?

## Response

## 3. 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

**(motivation of the paper)**

## 4. Comment

The overall organization of the manuscript is not discussed anywhere in the manuscript. Please add the same in the introduction section of the manuscript.

## Response

At the end of introduction there is the following phrase:

*“The rest of this paper is divided in the following sections: in section* [*sec:Method-description*](#sec_Method_description) *the proposed method is fully described, in section* [*sec:Experiments*](#sec_Experiments) *the datasets used in the experiments are listed as well as the experimental results and finally in section* [*sec:Conclusions*](#sec_Conclusions) *some conclusions are provided.”*

## 5. Comment

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

## Response

## 6. Comment

According to the authors what is the objective problem?

## Response

We have changed this phrase to the more accurate: *“**The vector x &xrarr; is the input pattern from dataset describing the problem. For the rest of this paper the notation d will be used to represent the number of elements in x &xrarr; .* ”

## 7. Comment

Authors may provide the architecture/block diagram of the proposed model for better comprehensibility of the proposed model concerning various aspects of the proposed model.

## Response

**(Na ginei flowchart tou algorithmou)**

## 8. Comment

How are the weights and biases considered in the current study?

## Response

The proposed method is used to train RBF networks with weights, centers and variances.

## 9. Comment

“The first phase of the proposed algorithm” does the authors mean to say “Crossover phase”.

## Response

## 10. Comment

What happens in crossover and mutation phases?

## Response

## 11. Comment

More comparative analysis with state-of-art models is desired.

## Response

## 12. Comment

By considering the current form of the conclusion section, it is hard to understand by AI Journal readers. It should be extended with new sentences about the necessity and contributions of the study by considering the authors' opinions about the experimental results derived from some other well-known objective evaluation values if it is possible.

## Response

**(Na mpei sto conlusion pos mporei na beltiothei i methodos sto mellon)**

## 13. Comment

Authors should use more alternative models as the benchmarking models, authors should also conduct some statistical tests to ensure the superiority of the proposed approach, i.e., how could authors ensure that their results are superior to others? Meanwhile, the authors also have to provide some insightful discussion of the results.

## Response

# Reviewer 3

## 1. Comment

Abstract needs to modify and to be revised to be more quantitative. You can absorb readers' consideration by having some numerical results in this section. It is suggested to discuss more about the findings of this study in the abstract.

## Response

**(Na grafei pali to abstract kai na mpoune ta pleonektimata tis texnikis kai apotelesmata kiolas)**

## 2. Comment

The aim/objective of the paper is not mentioned in the Introduction section, a brief discussion required.

## Response

**(motivation of the paper)**

## 3. Comment

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

## Response

The grammar is placed in a Figure to refer to it from the paper.

## 4. Comment

The Conclusion section must be more extensive. The future scope of the work should be provided.

## Response

**(Na mpei sto conlusion pos mporei na beltiothei i methodos sto mellon)**

## 5. Comment

As a minor formal remark, the use of acronyms should be avoided in both the title and the abstract.

## Response

Corrected.

# Reviewer 4

## 1. Comment

I cannot detect from the Introduction section what is presented in the paper.

## Response

**(motivation of the paper)**

## 2. Comment

Equations in the text should be cited as they are noted, so eq. (3) not just 3.

## Response

Done.

## 3. 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

## 4. 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

## 5. Comment

Grammatical Evolution is a type of genetics algorithm; in the Abstract I got confused, thinking that two methods will be used in the paper.

## Response

**(Na grafei pali to abstract kai na mpoune ta pleonektimata tis texnikis kai apotelesmata kiolas)**

## 6. 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, what are chromosomes.

## Response

## 7. Comment

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

## Response

We have rephrase the caption to the following:

*“The BNF grammar used in the current work, to produce intervals for the RBF parameters.”*

## 8. Comment

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

## Response

We have added the following phrase in the corresponding caption:

*“Every number in cells denotes average classification error as measured on the test set.”*

## 9. 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

1) We have extended the captions in result tables to define what the numbers denote.

2) The datasets are fully described in subsection 3.1

3) The RBF networks are described in Introduction section.

4) **(Na mpei sto conlusion pos mporei na beltiothei i methodos sto mellon)**

# Reviewer 5

## 1. Comment

An interesting study proposing an adaptation of the RBF network via genetic algorithms and specifically Grammatical Evolution. The manuscript is well suited to the journal and well structured without any linguistic issues detected.

The authors do analyze the algorithmic and mathematical background of the proposed method and have tested it on around 40 different data sets to evaluate its performance. Which was found superior compared to other traditional methods such as artificial neural networks and traditional the RBF method.

Did not detected any issues in this manuscript and in my opinion can be accepted as is.

## Response

Dear reviewer, thank you for your comments and the efforts to review this manuscript.