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ESWA: Editorial Decision on ESWA-D-18-03713

Binshan Lin <eesserver@eesmail.elsevier.com> Thu, Sep 6, 2018 at 9:32 AM
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Ms. Ref. No.: ESWA-D-18-03713
Title: Inducing Non-Orthogonal and Non-Linear Decision Boundaries in Decision Trees via Interactive Basis Functions
Expert Systems With Applications

Dear Dr. Antonio Paez,

Reviewers have now commented on your paper. You will see that they are advising that you revise your manuscript. For your guidance, two reviewers' comments are appended below.

If you decide to revise the work, please submit a list of detailed Point-to-Point changes or a rebuttal against each point which is being raised when you submit the revised manuscript. Point-to-Point responses should be grouped by reviewers (i.e., reviewer #1, reviewer #2, etc.). You can upload this as the 'Detailed Response to Reviewers' when you submit the revised manuscript.

Please note that the revised manuscript PDF file (a single file) you approve MUST clearly include complete Point-to-Point responses. We do NOT process any revision submission if Point-to-Point responses are incomplete or missing in the PDF file of the revised manuscript that you approve.

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I also urge you to:

(1) make a significant effort to satisfy the reviewers' concerns,

(2) include source files in the EES system when you are ready to submit your revised paper. Please upload the source files of your revised paper (if in Word, please upload the .doc or docx file; if in .TeX, please upload the .TeX, style) as these would be required in Production if your manuscript gets accepted.

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On your Main Menu page is a folder entitled "Submissions Needing Revision". You will find your submission record there.

The submission deadline of revised version is October 6, 2018.

With kind regards,

Dr. Binshan Lin
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Reviewers' comments:

Reviewer #1: This paper presents a technique of inducing non-orthogonal and non-linear decision boundaries in decision trees. Although the core idea is not new, this paper intuitively employs Radial Basis Functions for this purpose. This paper has the following major drawbacks.

The experiment section of this paper is inconclusive as rigorous evaluation on classification accuracy is missing. The authors should compare classification accuracy with other decision tree algorithms that are employing linear/orthogonal splits on a number of (30 or more) widely used, publicly available data sets preferably from the UCI Machine Learning Repository. As non-orthogonal and/or non-linear splits compromise knowledge interpretability and are more computationally intensive, the authors should concretely establish their superiority theoretically, experimentally and statistically (over iterative linear/orthogonal splits). Also, the authors should discuss more on SVM and put SVM in comparison spectrum. The authors should computational information in the experiment section.
Figures should be positioned in the text.

Reviewer #2: The paper augments random forest with IBF. The paper is well written and easy to follow. However, this reviewer has the main concerns regarding the experiments parts. The authors only conduct experiments on very limited number of dataset and compared with vey limited number of baselines.
Recently the researchers are using the following JMLR benchmarking to conduct large-scale comparison to remove the bias in dataset selection

a) "Do we need hundreds of classifiers to solve real world classification problems?."

Several important reference on oblique random forest are missing:
b) On oblique Random Forests
b) Random Forest with ensemble of feature spaces
c) Oblique Decision Tree Ensemble via Multisurface Proximal Support Vector Machine
d) Robust visual tracking using oblique random forests
e)Oblique random forest ensemble via Least Square Estimation for time series forecasting
f)Towards generating random forests via extremely randomized trees
g)Benchmarking Ensemble Classifiers with Novel Co-Trained Kernal Ridge Regression and Random Vector Functional Link Ensembles

In addition, there are some excellent review on ensemble learning, which is also related to the topic of the paper:
h) Ensemble methods in Machine learning
i)ensemble based classifiers
j)Ensemble classification and regression-recent developments, applications and future directions