Responses to Editor-in-Chief & Reviewer Comments

September 29, 2017

Overview

We appreciate these quite thorough reviews. We appreciate the feedback and suggestions.

Editor-in-Chief

Thank you for these detailed comments, which we respond to individually below.

> *Comments from Editor:*
>
> *15-Sep-2017*
>
> *Dear Dr. Young-Kyoon Suh:*
>
> *Manuscript ID TIIS-IS-2017-Jul-0844 entitled "MLPPI Wizard: An Automated Multi-level Partitioning Tool on Analytical Workloads" which you submitted to the KSII Transactions on Internet and Information Systems, has been reviewed. The comments of the reviewer(s) are included at the bottom of this letter.*
>
> *I am happy to inform you that the reviewer(s) have recommended publication, but also suggest some revisions to your manuscript. Therefore, I invite you to respond to the reviewer(s)' comments and revise your manuscript. Please go through the reviewers' comments carefully and then prepare for the revised paper and authors' response. Your revised paper will not be guaranteed to be accepted for publication in the TIIS journal. The editor and reviewers will again review the revised paper and authors response.*

In this response letter we address each of the reviewers' comments. We also incorporate into the revised paper our response to each comment.

> *To upload your revised manuscript, log into https://mc.manuscriptcentral.com/tiisjournal and enter your Author Center, where you will find your manuscript title listed under "Manuscripts with Decisions." Under "Actions," click on "Create a Revision." Your manuscript number has been appended to denote a revision.*

We used this procedure for uploading the revision.

> *You may also click the below link to start the revision process (or continue the process if you have already started your revision) for your manuscript. If you use the below link, you will not be required to login to ScholarOne Manuscripts.*
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>
> *https://mc.manuscriptcentral.com/tiisjournal?URL_MASK=963223d1218947b5b5750544c56a74b6*

Thank you for this additional information.

1. Revise your manuscript "by using the MS Word."

2. Please highlight the changes to your manuscript within the document by using bold and colored text "in BLUE" or by using the track changes mode in MS Word.

3. In addition to the revised manuscript, the authors are required to write the authors response answering the reviewers comments. In order to expedite the processing of the revised manuscript, please be as specific as possible in your response to the reviewer(s)' comments.

4. The authors response should be included in "the first page of the revised manuscript."

Once the revised manuscript is prepared, you can upload it and submit it through your Author Center.

Yes, we used the MS word program for revising our article. As requested, anything new or revised compared to the original submission is colored in blue and marked in **bold** face in the revised. In addition, corrections made are colored in red for distinction. As required, we provide this written response letter to answer each reviewer's comments. Finally, we include the letter in the first page of the revised article.

[IMPORTANT]: Your original files are available to you when you upload your revised manuscript. Please delete any redundant files before completing the submission.

Because we are trying to facilitate timely publication of manuscripts submitted to the KSII Transactions on Internet and Information Systems, your revised manuscript should be uploaded "by 15-Oct-2017." If it is not possible for you to submit your revision in the deadline, we may have to consider your paper as a new submission.

Once again, thank you for submitting your manuscript to the KSII Transactions on Internet and Information Systems and I look forward to receiving your revision.

Sincerely,

Dr. Mohammad Shojafar

Editor,

mohammad.shojafar@uniroma1.it

KSII Transactions on Internet and Information Systems

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We deleted any redundant files during the uploading process. Today (**October 8th, 2017 in KST**), the revised manuscript has been uploaded for further review, and thus, there is no issue with the specified deadline of October 15, 2017.

Reviewer 1

[Reviewer(s)' Comments to Author]: Reviewer: 1

Comments to the Author Generally Fig1. is not a figure scale and can be considered as a structure rather aha a Fig. 1. technically, the primary figures are the general scale and structure of the method which tends to grasp the authors' attention and must be clarified.

We totally agree with you. The old Fig. 1 is not at a real figure. We feel that it had better be put into a table for further reference, which is now Tab. 1.

The presented Wizard Architecture in Fig. 2 needs to be expanded.

We significantly expanded the architecture, which is now Fig. 1 on page 7, with a specified description of each phase. In addition, the figure now includes (1) the query workload text exemplified in the paper (on the top) and (2) the output solution produced by the wizard (on the bottom), for better clarification.

The table in Page3 does not have any caption to introduces besides, its location is badly organized.

Thanks for the comments. To address your concern, we put in tabular form the table with its caption on page 2 (now, Tab. 2). Note that we tabularized other examples for better exposition in the introduction.

The main contribution of the paper is so limited and needs to be extended in Section 1.

We took out some contributions mentioned in Section 2 (now Section 3) and then incorporated them into the contribution paragraph (on page 5 in the revision), which is now substantially extended.

In the experiment environmental setting, the deployment in realistic datasets are missing and must be indicated for the reproduction of the future readers.

The synthetic queries used for our experiments were generated from a realistic query template, which is from customer cases like reports and form templates. The queries are of type joining a fact table and a dimension table in a popular benchmark, representing a real analytical workload. In addition, the proposed wizard allows for general expressions for partitioning definition as addressed in the solution paragraph in the introduction. Hence, the results on our workloads do not lose their validity on a real environment. For more details, please refer to the Solution paragraph in the introduction and the third and subsequent paragraphs in Section 5.1.

According to the bar-shaped results, the WIZARD does not provide optimal results compared to the state-of the arts. They must clearly be expressed how this cases can be used in the real-time scenarios.

Your confusion comes from Figure 5 in the original submission. The proposed wizard obviously outperforms the compared approaches: no partitioning (NO PPI) and a human expert (EXP). For better clarification, we removed that figure and instead provided a comparison table. Again, our query workloads are from the real benchmark, SSB, and our algorithm is still applicable to any other type of analytical workload, since the search space is driven by the query predicates extracted from the workload.

Also, Authors should give a more clear definition of the "application type" used in the paper. For example, what information of applications are used and how to obtain this information.

We understand your concern. The application type of the proposed wizard is a <u>physical database design tool</u> (fundamentally different from several existing works [4–6]. Also note that any complex workload, giving many different partitioning options, can benefit from the automated wizard to find almost an optimal solution. For more details, please refer to the first, third, and fourth bullets in the Contribution paragraphs in the Introduction.

Last but not least backs to the background which is limited and some hot-related works are missing that are listed in i)"Using imperialist competition algorithm for independent task scheduling in grid computing" and ii) "A hybrid metaheuristic algorithm for Job scheduling on computational grids" that addressed the analytical workload exploitation in the real case studies that must be added in the background to make your work holistic for the future readers.

OK, we now have some mentions of the above two works compared to our work. Also, we added these two in the references in the revision.

Reviewer 2

Comments to the Author The paper could be published after addressing following comments: 1. Abstract could be better write, in this reviewer point of view, the current abstract is not comprehensive.

2. The manuscript could be better organize as well. For instance, the related works section could be placed after introduction section no before conclusion.

A great suggestion. We have relocated the related work section right after the introduction in the revised manuscript. Note that there are also some references newly added in that section for completeness.

3. Providing a comparison table could be useful for readers.

Yes, we do now provide Tab. 9 for better clarity on the comparison.

4. Conclusion is too long.

5. Introduction section need more references.

We've added some references in the contribution paragraph in the introduction on page 5.

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