Response to Batch Method JDSMC Paper Review

(Probabilistic Methods for Solving the AX=XB Problem in the Presence of Noise)

Reviewer 1:

Originality	Good
Significance	Marginal
Scientific relevance	Good
Completeness	Good
Acknowledgment of the Work of others by References	Acceptable
Organization	Acceptable
Clarity of Writing	Acceptable
Clarity of Tables, Graphs, and Illustrations	Acceptable
In your opinion, is the technical treatment plausible and free of technical errors?	Yes
Have you checked the equations?	Yes
Are you aware of prior publication or presentation of this work?	No
Is the work free of commercialism?	Yes
Is the title brief and descriptive?	Yes
Does the abstract clearly indicate objective, scope, and results?	Yes

Recommendation
This paper is Acceptable (Suggested changes (changes not mandatory)) , for publication as Full research paper . The quality of the paper is Good.

Reviewer 2:

Originality	Marginal
Significance	Marginal
Scientific relevance	Marginal
Completeness	Poor
Acknowledgment of the Work of others by References	Marginal
Organization	Poor
Clarity of Writing	Marginal
Clarity of Tables, Graphs, and Illustrations	Marginal
In your opinion, is the technical treatment plausible and free of technical errors?	Yes
Have you checked the equations?	No
Are you aware of prior publication or presentation of this work?	No
Is the work free of commercialism?	Yes
Is the title brief and descriptive?	Yes
Does the abstract clearly indicate objective, scope, and results?	Yes

Recommendation
This paper is Not Acceptable (Objections noted in comments) . The quality of the paper is Inferior.

Overall Assessment
The paper appears to have been rushed into submission. The material is not properly presented, not properly organized, and there are way too many typos and grammatical errors. It is recommended that the authors take thei time and filter out what is not relevant and what is truly novel and present it clearly.

Specific comments:

Minor:

“It is not customary to use cross product notation between column vectors (as it appears to be the case in Eq. 8. Cross product can be easily expressed using a certain skew-symmetric matrix product.”

- This seems overly reviewer specific. The spirit of the notation is reflective of the source work (Shiu and Ahmad paper according to Eq(38) and Eq(39).).

“Some typos/grammatical errors: "so(3) and se(3)" instead of capital letters in the Nomenclature, "the least sqaure", "Given two pairs As and Bs" , "Intead", "It follows the equations below when computing ..." all on page 3. Also it is not good to start a sentence with "And" or math. symbols (page 3 and in other places). There are many other similar errors which indicate that the paper was not sufficiently well prepared (probably rushed into submission).”

- The lowercase so(3) and se(3) are intended and denote the Lie algebra of SO(3) and SE(3) so the notation is valid - clarity will be added.
- The small grammatical errors will be addressed.

“It is also not good to put references in titles/subtitles (they are in many places).”

- This format was mirroring another paper, however, we will make the change.

“There are several operations/notions that are not "well known" which should be defined for the benefit of the reader. For example the quaternion product (in 3.3.1).”

- The quaternion product and dual quaternion product are explicitly defined in the referenced papers, however, we can add these.

“All quaternions are of unit norm so the statement in the previous sentence is confusing (... qx are unit quaternions).”

- According to Chou paper, P250 comments under Eq(A9), a quaternion doesn’t have to be a “unit quaternion”.

“Several symbols are not explained properly (for example on page 4 "...l_arrow m_arrow are screw parameters").”

- Again, these are explicitly defined in the referenced papers, however, we can add these.

“On page 5 under Eq. 35: "[1] where Rxe..." "The orthogonalized matrix Rx is further normalized as follows, then the rotation matrix..." All this is hard to comprehend.”

- The comments are valid and we will make the explanations, as well as the language, clearer.

“Eq. 34 uses the same notation for Rx (which is understandable but not usually recommended because of confusion)”

- A different notation will replace the older one to eliminate confusion.

“Letter "F" is used on a norm and it probably means Frobenius norm but I haven't seen it stated.”

- The Letter “F” does mean Frobenius norm and will add corresponding statement.

“Material starting on page 6-7 is a bit better presented, however, grammar errors and poor writing/explanation still persist (for example "The multiplying on the left by X ..." on page 8 is clearly incorrect. There are also missing references (see page 13, second column "This was done in [?]" and poorly written sentences "And since the computation of Sigma is exact and easy..."”

- Some of these comments seem to be stylistic preferences, but we will re-proof.

Major:

The major issue with the paper appears to be the depth of content and the effectiveness of presentation for the review of previous methods.

"The first 6 pages are an attempt at a review of existing methods, however, they could well be missing from THIS paper. The first 6 pages are incomplete and poorly presented for a review. The authors may consider expanding these into a full review paper if they consider necessary."

AND

"Section 4 is so poorly presented the reader will not appreciate why all this is good or even done. For example the following confuses: "Figure 2 shows that as the noise level s increases, Lie group method shows the least increase in rotation error, while the dual quaternion method's increase in the rotation error is the largest." Later it is simply stated the a "Lie is an improved version of the original Lie group method..." without much explanation, and a bit later "Dual Quat*" is mentioned similarly without much explanation."*

AND

"After page 6 is where it appears that the novelty of the paper lies, but the reader may have well abandoned reading it by now."

- Better and more detailed explanations will be given, and previous concern was not to over stress the comparison between the existing old methods.
- The improvements (not much though) on the Lie group method and the dual quaternion method can be presented in detail.
- The algorithm in the dual quaternion paper is implicit in certain places and some parts are not plausible and could be wrong. That part is "corrected" with assumptions that's not mentioned in the submitted paper and objective was to keep the section 4 focusing on comparison instead of correction.
- More rigorous simulation can be conducted to try and encompass specific instances where each method fails and this can be presented quantitatively. Currently, we picked a case where they all "worked" and mentioned the failings only qualitatively.

Possible Journals:

- Science, Measurement & Technology, IET (http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=4105888)
- Applied Mathematics and Computation (http://www.journals.elsevier.com/applied-mathematics-and-computation/)
- Applied Mathematical Modelling (http://www.journals.elsevier.com/applied-mathematical-modelling/)