

REBUTTAL

Response to reviewer 1

1. **The abstract should be reduced. There are many details that are not essential and make it too long. The abstract has to be more concise. It is not normal that references are included in the abstract. Elimination is recommended. Moreover, the paper is anonymous and you say “In a previous work [4], we have shown that”. To this reference, add that it is not complete. It was presented as a poster in last WSCG’16. The images of Figure 1 of both papers are the same. The only difference is that in one paper appears as (a) Left mandible and in the other paper in (a) appears the right mandible; and in (b), on the contrary.**

The abstract is reduced to be shorter and more synthetic than in the previous version. Besides, it is focused more on our method. We apology about the direct citation of our own work in the “anonymous” version, we have missed that when we have submitted, sorry.

Figure 1 shows the example of mandible images. We are working from 3years on the same collection of beetles images. That is true that we present in both articles a pretty similar image (probably not exactly the same beetle but all the images are very similar) but we need to present the images belonging to our set. Moreover in the previous paper (which have been the first one about this work) we have presented how we have adapted a method presented by Palaniswamy on Drosophila wings to compute the centroid size of the right mandibles .

NB: at this time we have considered only the right mandibles and not experimented the method on the left one, we have not imagined that left and right can exhibit differences as we have discovered after (that is explained in our results).

Computing centroid size has been the first asking of biologists and at this time the landmarks positions have been precise enough to response to their attempt. In a second round, when we have looked after finding the position of each landmark in order to lead different characterizations (curve analysis, length of some mandibles parts ...) we have observed that this method is not at the good level of precision to set all landmarks on the shape – this argument is mentioned in the present article – we have designed a chain of treatments to obtain a good approximation of all landmarks positions. This is a different approach to solve the problem to automatize the morphometric analysis of these objects.

2. **The state of the art section is missing. Automatic landmark detection on 2D images has been extensively used for other purposes, for example, cephalometry in human orthodontics or for face recognition. The authors should include a section with the state of the art related to their work.**

The state of the art is supplemented into the article. It presents the related works about detecting the landmark in other fields such as face detection, human orthodontics, morphometry analysis (Drosophila wing). It is also shown the comparing among the descriptors with the SIFT.

- 3. It would be recommendable to discuss their proposal and results with regard the state of the art. In a future work, it would be recommendable to compare their results with other methods.**

Our study stays in another context of the most usual landmark detection (for example as in face detection or landscape analysis). So, the comparison between the results is difficult to conclude. However, we have presented the results from the other authors. We also compare our result with the suitable one. In biology, the landmarks are set manually by biologists and they have their own meaning. Instead of evaluating our result with the different results, we have considered the manual ones (manual landmarks have been set by the biologists) as ground-truth, and our result is evaluated by comparing the result with the manual landmarks.

- 4. The references should be revised. Several of them are not complete ([3] and [4]). For example, the number and pages are missing in [3]. In this paper, the details are: 5(6):172-181.**

The references have been revised and supplemented. It was added the references about the related research, supplement the missing information. Besides, it was corrected the missing information in the exists references. Basically, the research in [3], [4] have been published, so we can use them as the references.

Response to reviewer 2

- 1. Please review carefully and correct grammatical mistakes.**

The grammar has been checked and improved.

Response to reviewer 3

- 1. The writing of this paper needs improvement.**

See our response to reviewer 2.

- 2. In this paper, literature research is insufficient and the relevant analysis is inadequate. More specifically, this paper simply introduces the background in the section of Introduction, and lacks the analysis of related work.**

See our response to reviewer 1 (section 2).

- 3. The introduction of the relevant methods are not greatly organized, which seems confusing on logical.**

We have re-written this part to try to follow a more logical sequence of explanation.

4. This paper lacks innovation and the technical contribution seems minor.

We place this work in application domain – Even the use of patch area, as we do, to compute SIFT descriptor is not the most usual way to do, we do not claim that we have written a new descriptor computing. But introducing automatisisation steps into the morphometric analysis of species features remains one of the biggest bottlenecks to treat large scale phenotypes. We collaborate strongly with a biologist team and our framework seems to response to their needs. We are continuing this work, mainly about the other parts of the beetles and from now, we know that each one exhibits different problems and requires to design new procedure chains that are not possible to find/adapt directly by the biologists.

5. The results are not presented very clearly. Experimental comparison is less sufficient. Comparison with the state-of-the-art is required, and quantitative comparison is also needed.

See our response to reviewer 1 (section 3)