For article :bioengineering-2944109

Response to Reviewer 2 Comments

1. Summary

Thank you for taking time out of your busy schedule to review the manuscript we submitted and put forward valuable comments. I made some changes to the manuscript, and marked the changed part in the manuscript with yellow, which can be more convenient to view. Listen to your words, better than ten years of reading books, after this improvement, our manuscript looks more orderly structure, more compact content.

2. Questions for General Evaluation	**Reviewer's Evaluation**	**Response and Revisions**
Does the introduction provide sufficient background and include all relevant references?	Must be improved	Thanks for your comments, I have made improvements
Are all the cited references relevant to the research?	Yes	Thank you for your affirmation
Is the research design appropriate?	Must be improved	Thanks for your comments, I have made improvements
Are the methods adequately described?	Must be improved	Thanks for your comments, I have made improvements
Are the results clearly presented?	Must be improved	Thanks for your comments, I have made improvements
Are the conclusions supported by the results?	Must be improved	Thanks for your comments, I have made improvements

3. Point-by-point response to Comments and Suggestions for Authors

Comments 1: A general comment is that the paper refers only to neural network segmentation but does not review or discuss conventional medical segmentation methods, such as contrast, colour or edge-based methods. Why is it so? Is it because neural methods perform better? If so, some literature review should be provided to justify this point.

Response 1: *[Type your response here and mark your revisions in red]* Thank you for your valuable advice. Traditional image segmentation methods can achieve certain segmentation effects in simple scenes, but their accuracy is limited in complex scenes, while deep learning methods have better

accuracy in complex scenes. We have added documentation to the latest manuscript to prove this.

Comments 2: In Section 2, several acronyms are undefined. E.g. IEA, DGA, CAB, SAB, and others.

Response 2: Thank you for finding and pointing out these problems we have revised in the manuscript.

Comments 3: Section 2 is overly convoluted and requires better organisation. First, it contains extremely long paragraphs. Second, some classification of methods would help the reader understand the taxonomy of the reviewed methods.

Response 3: Thank you for your comments. We have simplified the second part to make the structure of the article more reasonable.

Comments 4: Section 3 deserves an introduction. I would recommend that this introduction provides an overview that guides the reader to what follows next.

Response 4: Thanks for your comments, I have included a general description at the beginning of Part 3 to make the content clearer to the reader

[In this chapter, I will give an introduction to our network structure, including the overall network structure, each of our innovative structures, as well as their combination and principle.]

Comments 5: In line 223, "Nature images" is probably a wrong term.

Response 5: Thank you for your valuable advice. Yes, this word does not describe professional enough. I have replaced this word with "Image".

Comments 6: Please provide some intuition as to what a "G_O block" is.

Response 6: Thanks for your comments, this module is the core module of this model, which directly makes up the decoder, and the new modules generated on this basis make up the encoder. I have described this module in more detail in the article.

Comments 7/8: The block names in Fig. 1 are undefined./The block names in Fig. 2 are undefined.

Response 7/8: Thank you for your comments. I have explained and defined these in more detail in the manuscript.

Comments 9: Equations (1) and (2) appear to be the same. Why don't you merge them into one? (I understand that they are two separate operations but the only thing that changes is the kernel size).

Response 9: Thank you for your valuable advice. For formula 1 and formula 2, I think it is better to write them separately, because we need to better highlight the different effects of high frequency and low frequency, which is also the core operation of this module. So I thought it would be better to write them separately.

Comments 10: Isn't the symbol defined in 302 the same as convolution? If so, is it needed?

Response 10: Thank you for your valuable advice. This here represents element-wise multiplication, not convolution. Element-by-element multiplication refers to the operation of multiplying elements at corresponding positions in two matrices or tensors, which is different from the convolution operation. The convolution operation involves integrating between two functions, one of which is a version of flipping and translating. Element-by-element multiplication, on the other hand, simply multiplicates the elements at the corresponding positions in two matrices or tensors without involving any integration or translation operations.

Comments 11: AvgPool was defined too late after Equation 10, while already used in Equation 4.

Response 11: Thanks for your guidance, I have put the definition in formula 4.

Comments 12: Fig 4, is poorly drafted and arrows should be used throughout the data path.

Response 12: Thank you for your comments on our drawing, the overall look is more beautiful and

easier to read after the addition of arrows.

Comments 13: The benchmark datasets are not cited.

Response 13: Thanks for your guidance, I made the references in the new manuscript, while learning how others worked with this dataset.

Comments 14: Besides the GFLOPs please report some indicative execution times on a regular computer as the ones you mention in the abstract that the hospitals have. This way the reader can better appreciate the value of the proposed contribution.

Response 14: Thank you for bringing this up, but the purpose of model lightweight is to reduce the number of parameters and thus the need for hardware. The time problem is not a important indicator, because in the process of program operation, such as preprocessing, image loading, etc., occupy most of the time, and the time of model segmentation is very small in comparison.

Minor:

A space character is needed after each period (‘.’).

A space character is needed before each citation bracket (‘[‘).

Line 108. Delete one period from “..”.

Thank you for finding these problems and I have made changes in the manuscript.