Analysis of reviewers' round 2 comments

Reviewer A

Reviewer's Comment	Authors' Comment	Proposed Action	Done
I continue to feel that they are missing some fundamental facts about linear filtering. The most obvious way to make a filter offset invariant is to give it a zero mean, which they acknowledge. To make magnitude responses comparable one would typically start by scaling the kernels to have equal norms. The proposed algorithms 1 and 2 seem to try to achieve both of these simultaneously via a multiplicative scaling procedure that treats the positive and negative kernel values separately, which causes an overall distortion of the kernel in a manner that seems quite arbitrary. Why is the obvious reference case not presented for comparison? For each kernel, subtract the mean then scale the result to have a unit L2 norm. In their rebuttal the authors state that the "L2 norm simply scales all the values to [0,1]", which is profoundly wrong and does not make me feel any more confident in what they are presenting.	It is stated that algorithm 2 is the same as that of [20] while algorithm 1 is a modification thereof. Algorithm 2 is therefore the reference. In [20], the normalization is described in one sentence. The goal is to highlight the importance of gabor filter normalization in the context of illumination variation. " This study seeks to demonstrate that Gabor filter normalization is essential to robust vessel enhancement and that it affects the effectiveness of automatic thresholding." Comparative screen shots from our work demonstrate this point. The different results also show the uniqueness of our approach. There may be alternative approaches to solve the problem, this paper has however focused on the approaches learned from literature and what was intuitive to us.	It will be stated that: future work will explore other image processing normalization techniques such as normalization in the frequency spectrum.	✓
I maintain my opinion that there is questionably sufficient novelty in the approach to warrant a journal publication. The proposed modifications to the Gabor filter kernel are algorithmic and lack any coherent guiding principle, and the obvious formulations for achieving what they want seem to have been ignored. Nonetheless, in its current form the authors have highlighted what they feel are the useful contributions, and I would concede that the methods presented apparently have utility. The results presented are probably correct, and they do provide some indication of the extent to which variations in the kernel affect performance. I would not object strongly to the paper being published as it stands.	The problem of illumination variation has been identified and steps have been to taken to make a contribution towards dealing with it. The reviews have gone a long way towards increasing the amount of detail in the paper. In [20], normalization is described in 1 sentence and briefly explained in a foot note. We feel that this work will be beneficial to other researchers intending to use gabor filters and improve its performance.	Please see comment.	N/A

Reviewer C

Reviewer's Comment	Author's Comment	Proposed Action	Done
When they explain the construction of the ROC curve it is still not clarified which is the regulated parameter. Even if the sentences are correct, they are kept too general. Some more details on the specific computation of the ROC curve may help the reader in the understanding of the paragraph.	“ The regulated parameter in these ROC curves is the threshold intensity used to segment the image.”	A brief explanation of the ROC curve in context with the work done will be included.	✓
The state of the art needs to be up to date. There are important works (on very recent) that the authors are missing and for which a I give the references in the following: - Trainable COSFIRE filters for vessel delineation with application to retinal images - Azzopardi, George et al., Medical Image Analysis , Volume 19 , Issue 1 , 46 - 57 - Lam, B., Gao, Y., Liew, A.C., 2010. General retinal vessel segmentation using regularization-based multiconcavity modeling. IEEE Transactions on Medical Imaging 29, 1369-1381. The methods are both unsupervised approaches, based on filtering and thresholding, with which the authors are directly competing.	The first paper was published while this one was in review. The focus of this paper is on illumination variation and the literature comparison does not claim to be comprehensive. Its purpose is to illustrate that whilst tackling illumination variation, our results remain comparable to other works.	Please see comment.	N/A
The english is generally good, even if one more round of correction will be useful for the best presentation of the work. There are some typos, like, for instance in section 2.4.1: "if this Gabor filter were illumination invariant…" that should be "If this Gabor filter was illumination…"	Will seek advice and make changes were appropriate.	Will list the grammar changes made: • [32] rotate Gabor filters through several orientations and wavelengths in search of an optimal response. • Different normalization techniques such as zero integral [20] and base-off set normalization are tested in the Gabor filter. • Given lambda and b, it is	✓

		therefore possible to calculate. • A kernel size of 21x21 pixels was used in this study. • This process was straight-forward for all the images. • The interpretation of true negative classifications is dependent on whether all the pixels in the entire fundus image are considered or just those in the FOV. • This shows that they are all viable for use in retinal image segmentation. • Figures 7(c) and 7(d) show that the zero-integral methods generally tend to produce thin vessels.	