



SDI Review Form 1.6

Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	2014_BJAST_14383
Title of the Manuscript:	Automated mammogram segmentation using seed point identification and modified region growing algorithm
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

The paper addresses an important first step in the computer aided diagnosis of mammograms, i.e. the extraction of the region of interest that contains the abnormality. The authors have developed a fully automatic method based on region-growing to extract a portion of the breast tissue.

The method used is applicable to the problem, but as described does not contain full details to be independently reproducible.

The algorithm was applied to 148 mammograms, but final results are not clear because the authors are inconsistent in what is reported in the Results section as compared to what is reported in the Conclusions section. In the Results section, the authors state that ALL ROIs extracted contain the abnormality, while in the Conclusions the authors state that MOST of the ROIs extracted contain the abnormality.

Detailed comments are given below.

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	The method described seems to only extract a region of the breast that contains the tumor or abnormality, not the abnormality itself. This should be clarified in the paper, especially in Lines 8-9 which are currently misleading: "In this paper we propose a novel automatic segmentation algorithm for extracting the tumor or abnormalities in mammogram images.". Lines 141 – 142: Authors do not state how they came to choose the thresholds for the various regions. Is it, e.g. from analysis of a large number of images? The basis for the choice should be stated. Figure 2: The extracted line of pixels doesn't appear to correspond to the mammogram shown. This should be	Corrected as per the direction of the reviewer as In this paper we propose a novel automatic segmentation algorithm for extracting the portion of breast which contains tumor or abnormalities. We selected the threshold value on trial and error method by applying the different threshold values on the sampleses in the standard mammogram image dataset (Mini-Mias) with predefined abnormality details. Figure 2 is only a demonstation which shows how the he seed point is located and it is not the acutal seed point of the image shown in the figure.



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	corrected. Figure 2: The pixel regions could be labelled with the selected thresholds (i.e. background, breast tissue or noise) to make the method clearer. Lines 189 – 191: No details are given as to how the image is cropped to get the rectangular ROI. This is quite an important step in the process since Figures 4 and 5 give the impression that the results of the region-growing step are quite small compared to the rectangular ROI that is finally selected. Details of this step should be given. The images in Figures 4 and 5 have a very low resolution, so it is difficult to see what is happening. Perhaps, the authors could use fewer examples and have larger images? In Lines 223 – 225, the authors state that MOST of the ROIs contain abnormalities. This is inconsistent with Lines 200-201 and Lines 204-205, where the authors state that ALL ROIs contained the identified abnormality. Please correct. If it is not ALL, then the authors should give a quantitative measure (e.g. %) of how many ROIs contained the identified abnormality. The authors should give some indication of how long the algorithm takes to run, since this is usually a key factor in any computer-aided diagnosis method. The authors do not compare their algorithm to other similar algorithms. The article needs a review of the grammar.	Done The details of the cropping is explained in the section. Most of the images in the dataset are low résolutions and we selected the best of the images in the dataset. Rectified. The quantitative measure of the segmentation accuracy is obtained only after the classification. It is out-of-scope of this paper. Time complexity analysis is not done. revised
<u>Minor</u> REVISION comments	Line 36: re-order the references to be in increasing order	
<u>Optional/General</u> comments		