**An improved peripheral enhancement of mammogram images by using filtered region growing segmentation**

ABSTRACT

During the mammographic acquisition, the breast is compressed with a tilting compression paddle; hence the breast thickness is non-uniform across the mammogram and thinner in the peripheral area and therefore over exposing this area. In Computer Aided Detection systems, peripheral enhancements were used as a pre-processing stage for the enhancement of peripheral visibility of the uncompressed region of the projected breasts. A correction function is required to expand the perceptibility of the peripheral area that necessitates a better-segmented output of the peripheral region. This paper aims to improve the peripheral enhancement technique by using region growing segmentation method combined with an average filter that scales the grey level of the border regions to brighten the mammogram image. The filter enhances the details of those images and helps to obtain a better segmentation output, which is used as an input to the peripheral enhancement process. In the evaluation, a total of 600 images that consists of 300 normal, 170 benign and 130 malignant mass images, which are obtained from the Digital Database Screening Mammography (DDSM) dataset of the University of South Florida are used. The quality of an image after the peripheral enhancement process is evaluated subjectively and objectively, by using visual illustrations and the peak signal-to-noise ratio (PSNR), respectively. The results obtained show that the filtered region growing segmentation method outperforms the Otsu and the K-means segmentation methods.