

RANDOM WALKERS BASED BREAST THERMOGRAPHY IMAGE SEGMENTATION

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The leading cancer diagnosed in woman in Malaysia and Asia Pacific region is the breast cancer. With the introduction of standardized image interpretation criterion and the increase in computational capacity coupled with the renewed interest from the medical community, breast thermography is now being considered as an adjacent to the mammography. The lack of any ionizing radiation makes thermography an ideal method for initial screening of young women, also the chemotherapy progress can be easily monitored by thermography while other methods such as mammography cannot be used due to the caused radiation. Despite the fact that computer aided detection/diagnosis (CAD) of breast thermography has become highly accurate, Image segmentation methods for breast thermography remained at a moderately accuracy, while the basis for any good CAD system is a proper segmentation. To address this issue a new framework based on random walkers were developed to segment breasts in thermography images. In breast thermography diagnostic, proper detection and segmentation of the breast boundaries present the biggest challenge. As the boundaries of breasts, especially in the upper quadrants, are usually not present, this produces a great deal of challenge to segment breasts automatically. Many approaches have been developed to segment the breast in thermography such as Snakes, Active Contours and Circular Hough Transforms, but most of these methods fail to detect the boundaries of the breast with the required level of accuracy especially the upper boundaries of the breast, while most of them require the image to be manually adjusted and cropped to ensure proper segmentation. By utilizing random walkers, the breast can be segmented accurately and automatically which in turn will increase the accuracy and the reliability of human interpretation and/or computer aided detection/diagnosis systems.