Automatic Identification and Elimination of Pectoral Muscle in Digital Mammograms

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Authors:
K. Vaidehi
T. S. Subashini

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Abstract

Computer aided detection/diagnosis aims at assisting radiologist in the analysis of digital mammograms. Digital mammogram has emerged as the most popular screening technique for early detection of breast cancer and other abnormalities in human breast tissue. The pectoral muscle represents a predominant density region in most mammograms and can affect/bias the results of image processing methods. This paper addresses the problem of eliminating the pectoral muscles from the mammogram so that further processing for detection and diagnosis of breast cancer is confined to the breast region alone. The proposed work is done in three steps. In the first step, the mammogram is oriented to the left to minimize computations. In the second step the top left quadrant of the mammogram which contains the pectoral muscle is extracted. Next, the pectoral muscle contour is computed using our proposed algorithm. Totally 120 mammogram images were taken up for the study. A comprehensive comparison with manually-drawn contours by the radiologist reveals the strength of the proposed method and shows that it can be effectively used as a preprocessing step in the design of CAD system for breast cancer.

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