Mammographic Image Analysis - Directions for Future Research during PhD Study

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Abstract

Mammography is the best available examination for the detection of early signs of breast cancer such as masses, calcifications, bilateral asymmetry and architectural distortion. Standardized method BI-RADS for breast imaging reporting includes terms to describe breast lesions and their features. Wide range of features that define abnormalities and the fact that they are often indistinguishable from the surrounding tissue makes the computer-aided detection and diagnosis of breast abnormalities a challenge. The relevant mass and calcification features are variability, occurrence at different scales and orientations, and characterization by discontinuous changes in intensity, as well as more subtle global variations in texture. Using the wavelet transform, it is possible to detect details that appear at different scales and selectively enhance them within different resolution levels. The same core algorithm could be used for both calcifications and mass detection. Directions for future research during PhD study in the field of mammographic image analysis and possible use of wavelets will be presented.