

Assessment of a Novel Computer Aided Mass Diagnosis System in Mammograms

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Abstract

Introduction: Mammography is the most common modality for screening breast cancer. In this paper a computer aided system is introduced to diagnose benignity and malignancy of masses.

Methods: In the first step of the proposed method, masses are prepared for segmentation using a noise reduction and contrast enhancement technique. Afterwards, a region of interest is segmented using a new adaptive region growing algorithm, and boundary and texture features are extracted to form its feature vector. Consequently, a new robust architecture is proposed to combine weak and strong classifiers to classify masses. Finally, the proposed mass diagnosis system was also tested on mini-MIAS and DDSM databases.

Results: The obtained results indicate that the proposed system can compete with the state-of-the-art methods in terms of accuracy.

Conclusion: The novelties of the proposed system can be summarized as presenting a new automatic adaptive region growing algorithm to extract boundary of masses, using descriptors based on empirical mode functions, and introducing a new framework for combining classifiers.

Keywords: Breast Cancer, Mammography, Benign and Malignant.