Morphological Features Fusion for Identifying INBREAST-Database Masses Using Neural Networks and Support Vector Machines

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Abstract : In this paper a novel technique of mass characterization based on robust features-fusion is presented. The proposed method consists of mainly four stages: (a) the first phase involves segmenting the masses using edge information's. (b) The second phase is to calculate and fuse the most relevant morphological features. (c) The last phase is the classification step which allows us to classify the images into benign and malignant masses. In this step we have implemented Support Vectors Machines (SVM) and Artificial Neural Networks (ANN), which were evaluated with the following performance criteria: confusion matrix, accuracy, sensitivity, specificity, receiver operating characteristic ROC, and error histogram. The effectiveness of this new approach was evaluated by a recently developed database: INBREAST database. The fusion of the most appropriate morphological features provided very good results. The SVM gives accuracy to within 64.3%. Whereas the ANN classifier gives better results with an accuracy of 97.5%.