

Abstract

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Detection of Microcalcifications in Mammograms Using Support Vector Machine

For years cancer has been one of the biggest threats to human life it is expected to become the leading cause of death over the next few decades. Early detection of breast cancer can play an important role in reducing the associated morbidity and mortality rates. Clusters of microcalcifications(MC) in the mammograms are an important early sign of breast cancer. Mammography is currently the most sensitive method to detect early breast cancer. Manual readings of mammograms may result in misdiagnosis due to human errors caused by visual fatigue. Computer aided detection systems (CAD) serve as a second opinion for radiologists. A new CAD system for the detection of MCs in mammograms is proposed. The discrete wavelet transforms (DWT), the contourlet transform, and the principal component analysis (PCA) are used for feature extraction while the support vector machine (SVM) is used for classification. The best classification rate was achieved using the DWT features. The system classifies normal and tumor tissues in addition to benign and malignant tumors. The classification rate was 100%.