Abstract

Texture-based computer-aided diagnosis (CADx) of microcalcification clusters is more robust than the state-of-art shape-based CADx because the performance of shape-based approach heavily depends on the effectiveness of microcalcification (MC) segmentation. This paper presents a texture-based CADx that consists of two stages. The first one characterizes MC
clusters using texture features from gray-level co-occurrence matrix (GLCM). In the second stage, an embedded feature selection based on particle swarm optimization and a k-nearest neighbor (KNN) classifier, called PSO-KNN, is applied to simultaneously determine the most discriminative GLCM features and to find the best k value for a KNN classifier. Testing the proposed CADx using 25 MC clusters from mini-MIAS dataset produced classification accuracy of 88% that obtained using 2 GLCM features.

Reference


Index Terms

Computer Science

Wireless Communication

Key words

Microcalcifications

GLCM texture features

feature selection

particle swarm optimization
Classification of Microcalcification Clusters via PSO-KNN Heuristic Parameter Selection and GLCM Features