

ABSTRACT

The architectural distorted regions in mammogram images are detected and segmented using computer aided hybrid classification approach in this research work. The main importance of this research work is to provide a computer aided methodology for screening the distorted regions in mammogram images. In present approach, the classification accuracy of the conventional methods is not suitable for further diagnosis process such as malignant and benign. Hence, the main objective of this research is to develop an efficient architectural region detection method using soft computing method with high classification accuracy for further diagnosis purpose. This proposed method has two stages of the proposed flow as architectural distorted detected mammogram image and segmentation of architectural distorted regions in mammogram images. The first stage of this proposed method uses Random Forest (RF) classification method which classifies the source mammogram image into either normal or abnormal. In second stage of the proposed method, the abnormal image is further classified into either Benign or Malignant using Adaptive Neuro Fuzzy Inference System (ANFIS) classification approach.

The proposed methodology for architectural distorted region detection is tested on the publicly available mammogram datasets Mammographic Image Analysis Society (MIAS) and Digital Database for Screening Mammography (DDSM) respectively. In this research, the mammogram images from MIAS dataset are grouped into normal case (156 images), benign case (122 images) and malignant case (98 images). The mammogram images from DDSM dataset are grouped into normal case (144 images), benign case (112 images) and malignant case (145 images). The overall average detection rate of the proposed system on the mammogram images in MIAS dataset is about 98.7%. The overall average detection rate of the proposed system on the mammogram images in DDSM dataset is about 98.3%. The extensive simulations are carried out on the mammogram images which are obtained from these dataset and the results are compared with stated of art methods. It is clearly with the proposed methods

using NSCT decomposition coefficients for feature extraction, that the accuracy of proposed method stated in this research is improved with respect to conventional methods.