Combination Shape and Texture Features in Diagnosis Skin Cancer

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A novel method to detect the skin cancer by using adaptive Computer-Aided Diagnosis (CADx) in dermoscopy images is presented. After distinguishing of lesion, shape and texture features is extracted from Regions of Interest (ROI). Zernike polynomials and NRL features are utilized as descriptors of shape characteristics. Also, texture features are extracted by GLCM, GLRLM, PSD and Ripplet transform. Valuable feature reduce with principle component analysis (PCA) and proposed method and fused together. Then, Multi-layer Perceptron (MLP), support vector machine (SVM), k-nearest neighbor (k-NN), Naïve Bayes, classify them. As a result, the diagnostic accuracy of melanoma and Area under an ROC curve (Az) is improved, simultaneously. Az in PCA and proposed methods are calculated 0.872 and 0.912 and also maximum classification accuracy are calculated 92.07 and 94.73. To compare the relative performance of the designs presented in the literature, a Fig. of merit (FOM) is proposed. Improvement of proposed method compared to the previous works is evident from simulation results.