

A machine learning technique for MRI brain images

HEBA MOHSEN MOHAMED MOSAAD HUSSSEN, El-Sayed A. El-Dahshan,
Abdel-Badeeh Salem

Abstract

This study presents a proposed hybrid intelligent machine learning technique for Computer-Aided detection system for automatic detection of brain tumor through magnetic resonance images. The technique is based on the following computational methods; the feedback pulse-coupled neural network for image segmentation, the discrete wavelet transform for features extraction, the principal component analysis for reducing the dimensionality of the wavelet coefficients, and the feed forward backpropagation neural network to classify inputs into normal or abnormal. The experiments were carried out on 101 images consisting of 14 normal and 87 abnormal (malignant and benign tumors) from a real human brain MRI dataset. The classification accuracy on both training and test images is 99 % which was significantly good. Moreover, The proposed technique demonstrates its effectiveness compared with the other machine learning recently published techniques.

2012 8th International Conference on Informatics and Systems (INFOS) 2012, May