

ABSTRACT

The development of biomedical science has fueled many researches. Include in these researches are computer-based diagnoses program, such as brain tumor detection in *Magnetic Resonance Imaging* (MRI).

It was already known in biomedical environment, brain tumor can be classified in two categories, which are *Benign* and *Malignant*. Combination of image processing, feature extraction, and artificial neural network, it is possible to detect and classify the categories of brain tumor from MRI images.

In this research, was made a software of computing brain tumor detection which has been used for classifying in three condition of brain, which are *Benign*, *Malignant*, and normal. Classification was concerted to statistic analysis of size (width) and texture (form and contour) tumor area. The general steps of image processing are: *acquisition*, *grayscale*, *enhancement*, *segmentation*, *labeling*, and *detection*. The term of texture extraction here is statistic extraction because of its texture analysis in first and second order parameters can be usefull to make good pattern of categories each others. The final step is to classify these features using Radial Basis Function (RBF) artificial neural network.

Testing has been done in Matlab 2006a. Best Processing was obtained median filter kernel 25, and best training was obtained using 3000 epoch. Using center numbered 18 vector, computation time was 97.37 seconds. Percentage of best test value in this system from all images is 92.59%, while for trained images is 100% and tested images is 77.77%.

Key words : *Magnetic Resonance Imaging*, *Benign*, *Malignant*, image processing, statistic extraction, RBF.