Abstract

The functionality of brain can be disrupted by brain tumor, which is an abnormal growth of tissue in brain or central spine. Due to undefined size, shape and location, detection of brain tumor from MRI (Magnetic Resonance Imaging) is a challenging and difficult task. Previous tumor segmentation methods were generally based on intensity enhancement techniques on T1-weighted image, which was appeared with gadolinium contrast agent on strictly uniform intensity patterns. This paper presents a new method based on Thresholding along with morphological image analysis techniques to detect brain tumor from MRI image. The image was first converted to grayscale and then noises were removed by applying different filtering techniques. The grayscale image was then converted to binary image adding 0.3 with the Otsu's threshold value to perfectly segment the tumor region. Afterwards, morphological operations were performed to detect the tumor that contains the brightest part of the MRI. The method suggested for detection was tested over 72 FLAIR images of 72 patients taken from BRATS Brain Tumor database, out of which the proposed algorithm was able to detect tumor
A Segmentation based Automated System for Brain Tumor Detection

from 61 images successfully. Experimental result showed an accuracy rate of 84.72% in detecting 61 patients Brain Tumor which is very much promising compares to other existing method.

References

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A Segmentation based Automated System for Brain Tumor Detection

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Index Terms

Computer Science

Artificial Intelligence

Keywords

Brain tumor, MRI, FLAIR, BRATS, Segmentation, Image morphology.