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A Modified & Improved Method for Detection of Tumor in Brain Cancer

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Abstract :- The precise information of a tumor plays an important role in the treatment of malignant tumors. The manual segmentation of brain tumors from Magnetic Resonance images (MRI) is time consuming task. Processing of MRI images is one of the parts of this field. The detection and extraction of tumor is done from patient's MRI scan images of the brain. The basic concepts of the image processing are some noise removal functions, segmentation and morphological operations. The modified image segmentation and histogram thresh holding techniques were applied on MRI scan images in order to detect brain tumors. In addition, a region prop and skull is used to detect the tumor in the brain. The proposed method can be successfully applied to detect the contour of the tumor and its geometrical dimension. The result of proposed research has been very promising.

Key words :- MRI, Histogram, brain tumor detection, tumor identification, segmentation.

I. INTRODUCTION

Tumor is generally defined as the abnormal growth of the tissues. Brain tumor is an abnormal mass of tissue in which cells grow and multiply uncontrollably, in brain this mechanism is unchecked by the control normal cells. Brain cancer can be counted among the most deadly and intractable diseases. Brain tumors can be primary or metastatic, and either malignant or benign. A metastatic brain tumor is a cancer that has spread from elsewhere in the body to the brain. It is a kind of brain disorder in which clusters of nerve cells, or neurons, in the brain sometimes signal abnormally. MRI helps in finding the tumor in the brain. MRI is used to produce high quality images of the parts contained in the human body. The MRI imaging is often used when treating brain tumors, ankle, and foot. These images are also known as the high resolution images. With the help of these images one can derive the detailed anatomical information to examine human brain development and discover abnormalities. Many methodologies are used for classifying MRI. These techniques are fuzzy methods, neural networks, atlas methods, knowledge based techniques, shape methods, variation segmentation. The MRI consists of T1 weighted, T2 weighted and proton density weighted images. These are processed by a system which integrates fuzzy based technique with multispectral analysis. Imaging plays a central role in the diagnosis and treatment planning of brain tumor. For this purpose many methods are use. The MR imaging method is the best due to its higher resolution.

II. PROBLEM IN BRAIN MRI IMAGES

Magnetic resonance imaging brain tumor images consist of speckle noise. The main problem in the current work is to purpose a system for identifying the brain cancer tumor from ultra sound images. Initially the segmentation will be done for detecting the tumor. The speckle noise will be suppressed the next phase features will extracted out of the segmented image. The feature extracted of the image will represent its properties and on the analysis of values of the texture feature parameters The MRI image will be classified as benign and malignant brain cancer tumor. Here to solve this problem, the region based and the skull method is used for the detection of the tumor. They have several advantages, but line and edge information in computer vision systems are also important. The proposed method tries to combine region and skull information.

III. LITERATURE REVIEW

Qiang Wang et.al discuss about the problem of classifying brain tumors as benign or malignant using information from magnetic resonance (MR) imaging and magnetic resonance spectroscopy (MRS).for this purpose several methods are used like: segmentation, feature extraction, feature selection, and classification model construction. By the use of an automated segmentation technique, the tumor mass boundaries in the MR images may be find. It can be analysis by the use of regions of interest (ROIs). The concentric circle technique is applied on the ROIs to extract features that are utilized by the classification algorithms. In this paper, the aim of the author is to achieve a high accuracy in discriminating the two types of tumors. Some preprocessing steps prior to characterization and analysis of regions of interest (ROIs) are segmentation and registration. Image registration is used to determine whether two subjects have ROIs in the same location. Image segmentation is required to delineate the boundaries of the ROIs. Segmentation can be performed manually, automatically or semi automatically. The manual method is time consuming and its accuracy highly depends on the domain knowledge of the operator.

Jason J. Corso et.al discussed about the automation segmentation. For the automation segmentation a new method is purposed. The automatic segmentation method is used for the heterogeneous image data. It takes a step toward bridging the gap between bottom up segmentation methods and top down generative model based approaches. The main motive of this paper is the Bayesian formulation. It is used for incorporating soft model assignments into calculation of affinities. In this author integrate the resulting model aware affinities into the multilevel segmentation by using the weighted aggregation algorithm, which helps to detecting and segmenting brain tumor. The medical image analysis typically involves the heterogeneous data that has been sampled from different processes like anatomic and pathologic physical processes.

Minakshi Sharma et.al **,** in this paper author discussed about the detection and segmentation of brain tumor, because it provides anatomical information of normal and abnormal tissues. It helps in treatment planning and patient follow up. There are number of techniques for image segmentation. In this paper ANFIS (Artificial Neural Network Fuzzy Inference System) technique is used for image classification and then compares the results with FCM (Fuzzy C means) and K-NN (K-nearest neighbor). ANFIS includes benefits of both ANN and the fuzzy logic systems. A feature set and fuzzy rules are selected to classify an abnormal image to the corresponding tumor type. The manual classification of magnetic resonance (MR) brain tumor images is a challenging and time consuming task. Manual classification is highly prone to error due to human error and the variability in the system. There are no universal algorithms for segmentation of every medical image. For the different body parts MRI image needs different type of segmentation.

D. Jayadevappa et.al : discuss about the Medical Image segmentation. It generally deals with segmentation of tumor in CT and MR images for improved quality in medical diagnosis. The geometric vector flow (GVF) enhances the concave object extraction capability. It also suffers from high computational requirement and sensitiveness to noise. In this paper author combines the watershed algorithm with GVF snake model. This helps to reduce the computational complexity, improve the insensitiveness to noise and capture range. The image is segmented firstly through watershed algorithm. It helps to enhance the tumor boundaries. The image segmentation technique plays an important role in medical imaging by facilitating the delineation of regions of interest. There are many techniques in medical image segmentation depending on the region of interest.

Garima Garg Sonia Juneja : discuss that the image processing is any type of signal processing technique. In the image processing any abnormal image of brain tumor is taken. An extracted portion of tumor can be obtained by applying genetic algorithm with fuzzy clustering means method. FCM is superior over different clustering approaches. The combined approach is used to improve segmentation efficiency.

Meghana Nagori et.al : in this paper author discuss about the metabolite values. As the brain tumor patients are increasing day by day. Metabolites values are used to detect the brain tumor. Some of the metabolites values are NAA, Creatine, Choline and Cr2. NAA ratio is used to detect the tumor in the brain. As it decided the tumor type so weights are assigned to each metabolite while clustering.

Dr.N. Nandha Gopal : discussed about the Magnetic Resonance Imaging. MRI plays an important role in Brain Tumor dignosisation in advanced stages. It is a form of medical imaging using nuclear magnetic resonance of protons in the body. The segmentation process is used to extract suspicious region from complex medical images.

IV. PROPOSED SOLUTION

In the brain tumor detection, magnetic resonance imaging (MRI) Plays a vital role. In our purposed approach MRI is used. After that EDAMAS is used, which helps to find out the swelling of the soft tissues . After that we use the descriptor, region growing and the masking algorithms.

Algorithm: The Steps of the algorithm are as following:

1. Give MRI image of brain as input.
2. Convert it to gray scale image.
3. Apply high pass filter for noise removal.
4. Apply median filter to enhance the quality of image.
5. Compute the segmentation.
6. Compute the Edamas.
7. Compute the region growing.
8. Compute the mask algorithm
9. Finally output will be a tumor region.

After that we create two types scanning:

- vertical scanning
- horizontal scanning

This can be done using round function. After that we made histogram for particular figure which we want, the use age of histogram is that it is block is a Signal Processing block set block. The main function in which we find the max and min score function for vertical using top and down parameter. After that find the disease in the image using left right search function, in which we used transpose function of images and masks. In the end, horizontal scan start. Repeat the same process start after vertical scan. After that region props, skull is used. Then find the area rather than length of object or disease.

V. CONCLUSION AND FUTURE WORK

The previous research have introduced the problem occur during the detection in brain tumor and segmentation in MRI. The study of this problem is practically motivated, but has properties that make it an interesting and challenging Masking

algorithm. It also introduced a framework that combined ideas from the prior work into a general method to perform this task automatically. It is also used many techniques, which helps to remove the noise from the scanning images. The MRI are used in this, which are helpful in finding the tumor location in the brain.

In future this programmer can be done more advanced so that tumor can be classified according to its type. Also tumor growth can be analyzed by plotting graph which can be obtained by studying sequential images of tumor affected patient.

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