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Integrated Approach For Bone Tumor Detection From Mri Scan Imagery

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Abstract- Medical image processing is an important field of research as its outcomes are used for the betterment of health issues. A tumor is an abnormal growth of tissues. As the tumor grows, the abnormal tissue displaces healthy tissue. Bone tumors develop when cells within a bone divide uncontrollably, forming a lump or mass of abnormal tissue. There is a large class of bone tumor types which have different characteristics. When cells divide abnormally and uncontrollably, they can form a mass or lump of tissue. This lump is called a tumor. Bone tumors form in your bones. As the tumor grows, abnormal tissue can displace healthy tissue. Bone tumors develop when cells within a bone divide uncontrollably, forming a lump or mass of abnormal tissue. There is a large class of bone tumor types which have different characteristics. When cells divide abnormally and uncontrollably, they can form a mass or lump of tissue. This lump is called a tumor. Bone tumors form in your bones. As the tumor grows, abnormal tissue can displace healthy tissue. This project proposes an approach to detect bone tumor in MRI images. A proposed approach integrates pre-processing technique and to extract tumor region we have used morphological operations.

Keywords-MATLAB*;* Gray Level Co-occurrence Matrix

1. INTRODUCTION

Abnormalities in the growth or structure of bones are termed as bone lesions and have been classified into three categories: malignant, benign and non-neoplastic by the British Institute of Radiology. They commonly occur in long bones but can be found in any part of the body.

Accurate detection of bone lesions plays a key role in providing valuable clinical information and also helps determine the course of treatment (surgical intervention or radiation) making it an important part of a radiologist's work. Additionally, bone metastasis could be a prognostic factor and indicate if chemotherapy would help the patient.

Characterization, quantification and detection of several bone abnormalities for CT images can be done using Computer Aided Diagnosis systems.

2. OBJECTIVE

The main objective of the paper is to propose the Qualitative analysis and quantitative analysis of feature extraction and image quality assessment is used to segment the cancer detected portion. To segment the portion, first have to filter out the acquired image based upon the masking methodology. The Morphological function including dilation and erosion method will be applied extracted throughout the filtered image. By the method of morphological bounding box will be drawn over the affected portion. Then, the region enclosed by bounding box will be splited out separately. After filtering and contrast enhancement, image quality assessment (Mean Square Error, Peak Signal to Noise Ratio etc) is calculated to compare other techniques. After segmenting tumor region, the patient's caretaker can receive the details through E-mail as report and Short Message Service (SMS) using GSM module. Finally Accuracy estimation will be done for algorithm efficient level.

3. RELATED WORK

Image processing have a vast area under research, in which Medical Imaging is the most significant area to work in. As in biological cases such as fractures, tumors, ulcers, etc image processing made it is easier to find out the exact cause and the best fitted solution.
Specifically in tumor detection medical imaging achieved a benchmark by resolving various complexities. Basically Medical Imaging can be explained as the process of creating human body images for medical and research work. For tumor detection various techniques such as MRI(Magnetic Resonance Imaging), CT(Computerised tomography) scan and Microwave are available among mentioned techniques MRI delivers the best images as it has higher resolution.

A proposed approach integrates pre-processing technique and to extract tumor region we have used four image segmentation techniques, viz., Thresholding and Morphological operation, K-Means Clustering, Fuzzy C-Means Clustering and Rough Fuzzy Clustering.

An experimental result presents the comparison of segmentation techniques for detection of bone tumor .

The proposed Lung cancer detection system using image processing technique to classify the presence of cancer cells in lung and its stages from the CT-scan images using various enhancement and segmentation techniques, aiming for accuracy in result.

The overview of the most common segmentation techniques, and a comparison between them. It discusses the "Grab-Cut" technique, and" Graph Cut" techniques. Grab Cut is a way to perform 2D segmentation in an image that is very user friendly. The user only need to input a very rough segmentation between foreground and background .

The Graph Cut approaches to segmentation can be extended to 3-D data and can be used for segmenting 3-D volumes. Other segmentation techniques use either contour or edge segmentation to perform segmentation. The Graph Cut techniques use both contour and edge detection. Typically this is down by drawing a rectangle around the object of interest. The way that this is accomplished technically is by using a combination of Graph Cuts and statistical models of the foreground and background structure in the colour space. Grab Cut Technique use very minimum energy to separate Foreground and Background Images.

4. METHODOLOGY

This method is based on K-means clustering. In k-means technique firstly defining of number of cluster is done. Then cluster center is chosen randomly. After this the distance between each data point and each center are measured.

The distance is called Euclidian function. By using the distance formula, single pixel is compared to all cluster centers. The cluster which is having shortest distance among all the clusters, the pixel will be moved to that cluster.

5. OUTPUT

The above picture is produced from MRI filter report and information securing process is done after that shading change is finished.

GLCM highlight extraction esteem is executed right now gabor process is completed. Quality include extraction esteem is actualized as of now. Differentiation improvement is finished and last outcome esteems are determined.

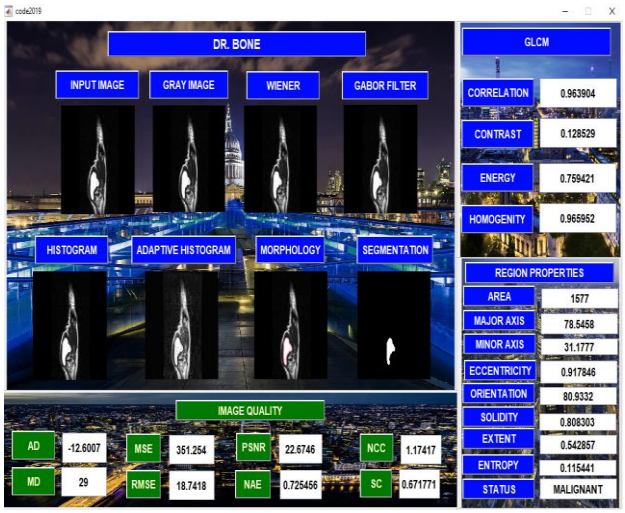

Fig 2: Output

6. CONCLUSION

This undertaking centers about the location of the bone tumor and its order It can be additionally reached out to distinguish the phases of the malignant growth. Malignancy is an imperative factor in the worldwide weight of the maladies. The separated portioned picture is additionally prepared to assess the pixel power in the locale of the intrigue. In this, the PC supported demonstrative framework, MRI pictures are proposed and it is material for unique format.

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