BRAIN TUMOR DETECTION USING IMAGE PROCESSING

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ABSTRACT

Brain tumor extraction and its analysis are challenging tasks in medical image processing because brain image is complicated .Segmentation plays a very important role in the medical image processing.In that way MRI (magnetic resonance imaging)has become a useful medical diagnostic tool or the diagnosis o brain & other medical images.In this project, we are presenting a comparative study of three segmentation methods implemented or tumor detection .The method includes kmeans clustering using watershed algorithm . Optimized k-means and optimized c-means using genetic algorithm.

KEYWORDS

DBMS,ACID,DIP,RAID,RSA

1. INTRODUCTION

With the improvement of modern medical standards, medical imaging technology plays an increasingly important role in daily medical diagnosis and medical research. Therefore, research on medical diagnostic image data is very important. As a tumor disease with frequent occurrence and complexity, brain tumor has become a key research topic in the medical field. The diagnosis of brain tumors is usually based on imaging data analysis of brain tumor images. Accurate analysis of brain tumor images is a key step in determining a patient's condition. However, the accumulation of doctors' personal medical knowledge, differences in experience levels, and visual fatigue can affect the correct analysis of image results. Therefore, how to accurately detect brain tumor images is very important. Magnetic Resonance Imaging (MRI) can provide information on the shape, size, and position of human tissues and organs without high ionizing radiation. The images obtained are very clear and precise. MRI greatly improves the diagnostic efficiency, avoids the operation of thoracotomy or laparotomy exploration, and provides a good guide for lesion localization and surgical treatment. Brain tumor MRI uses threedimensional multi-band imaging technology, and chest X-ray scanning, etc. Compared with 2D images, 3D multiband MRI can provide the coordinate position of the lesion area to assist the doctor to accurately locate the lesion area. In addition, MRI imaging can also obtain different structures of the same tissue using the unused development sequence. That is, a multimodal MRI image. Different modes can display different brain tumor features

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Nishant Verma et al [2] proposed that region growing is region based image segmentation. Here the intensity of same image is grouped into one region using 4- connected neighbourhood or 8-connected neighbourhood. If the intensity belongs to the same seed, it belongs to one region and process is iterated. Region based geometric active contour models are more immune to noise in the MRI resulting in poor segmentation.Deepthi Murthy T.S et al [3] Using thresholding and morphological operations efficient brain tumour segmentation is carried out. But the threshold value used is global threshold, hence not fully automated needs human intervention. L. Ramya et al [4]A seeded region growing segmentation is used to detect the tumour in MRI brain image. Also skull removal procedure is employed using morphological operators to increase the accuracy of brain tumour detection. International Journal of Engineering Research & Technology (IJERT) ISSN: 2278-0181 Published by, www.ijert.org ICIATE - 2017 Conference Proceedings Volume 5, Issue 01 Special Issue – 2017

Architecture Diagram

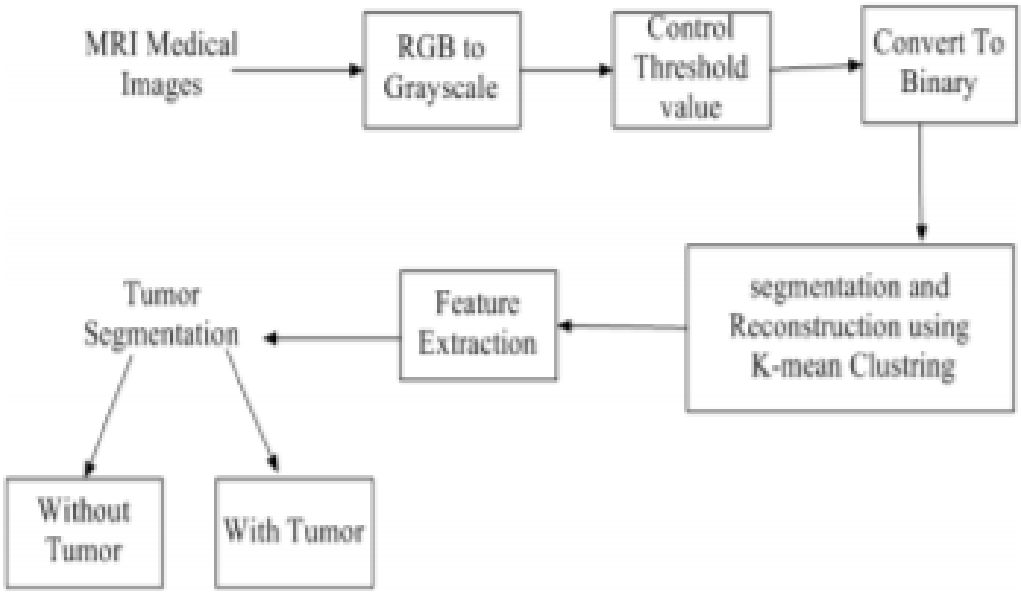

Figure 1 Architecture diagram

2. PROBLEM STATEMENT

Modules

K-Means Clustering

K-means clustering aims to partition n observation into ‘K’ clusters in which each observation belongs to the cluster with the nearest mean.

K-Means Clustering with Watershed

- If variables are huge, then k-means most of the times computationally faster than ,if we keep k small. Watershed algorthim improves the primary results of segmentation of tumor done by kmeans.
- Defficult to predict k-value &k-means cannot find nonconvex clusters. Different initial partitions can results in different final clusters. This methods does not work well with clusters of different size and different density.

MRI of Brain Images

- This is the first step of our proposed project .In this the data is been provided that is the magnetic resonance images(MRI) that are been collected in their original format's that are (.ima, .dcm).
- Mostly the mri images are of .dcm (DICOM[13]) Digital imaging and communications in medicine. We have used file operations fopen(), fclose() available in matlab to read MRI images. Here the gray scale MRI images are been provided as input to the system. 3.2 Pre-Processing International Journal of Information Sciences and Application (IJISA). ISSN 0974-2255, Vol.11, No.1, 201

3. EXPERIMENT AND RESULTS

Output Screen

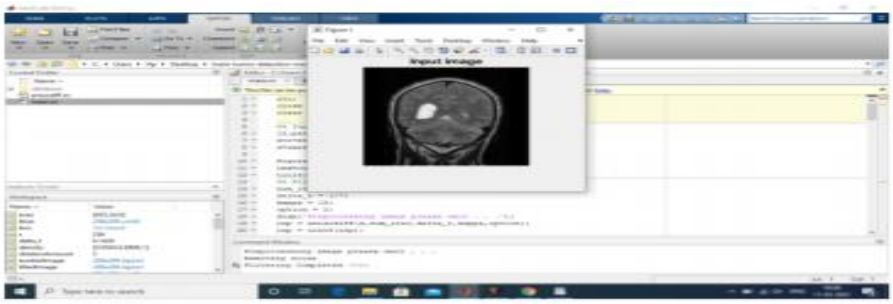

Figure 2 Input Form

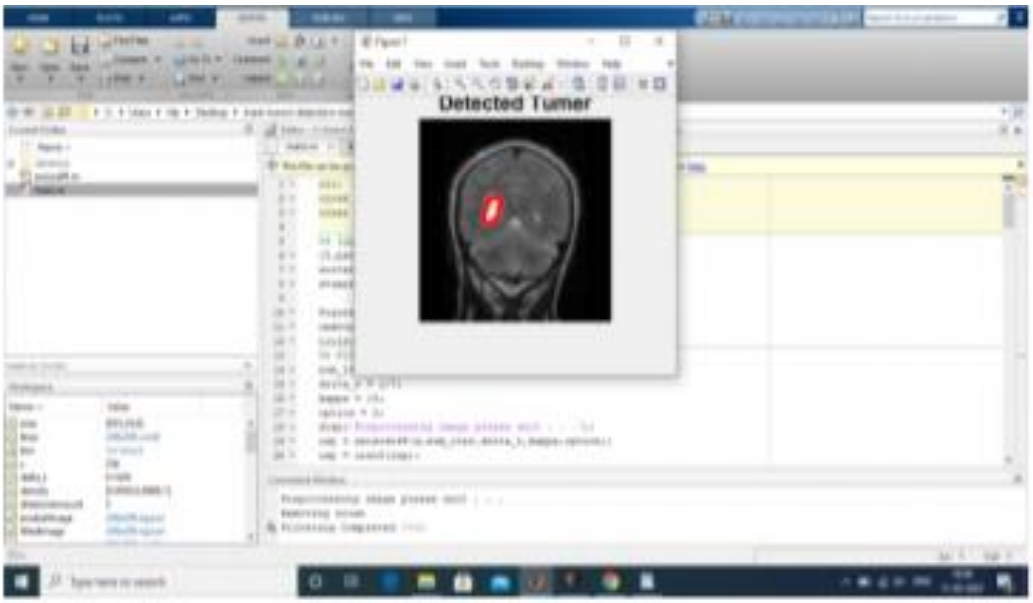

Figure 3 File Detected Form

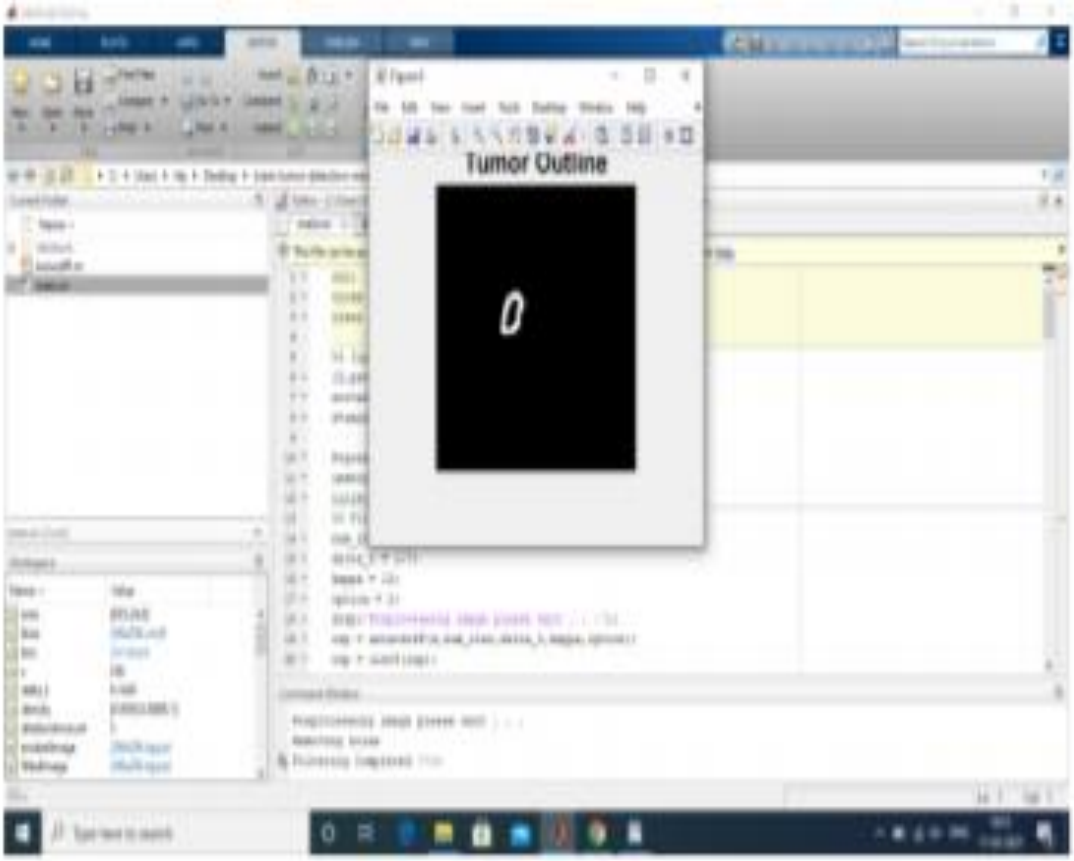

Figure 4 Outline Form

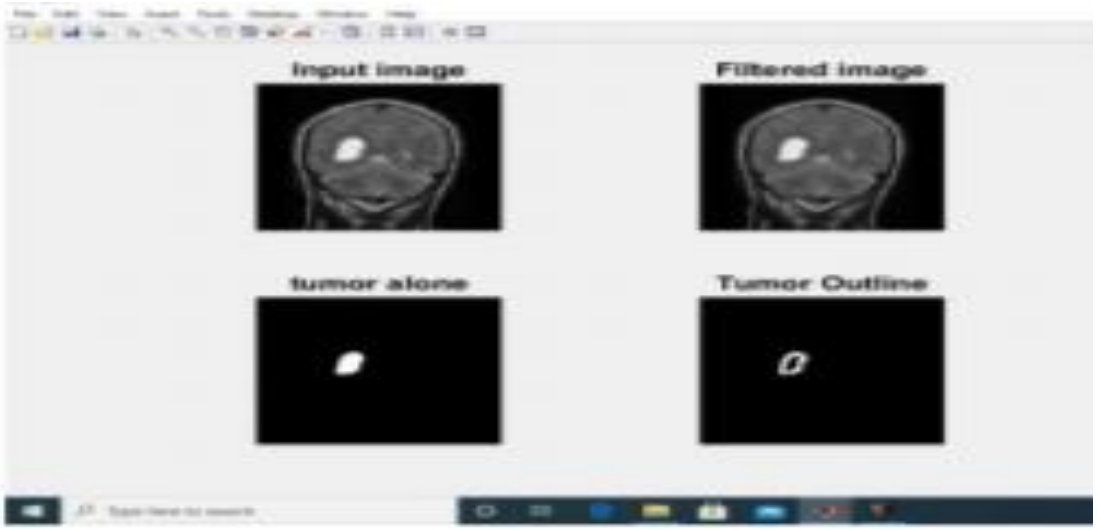

Figure 5 Image Process

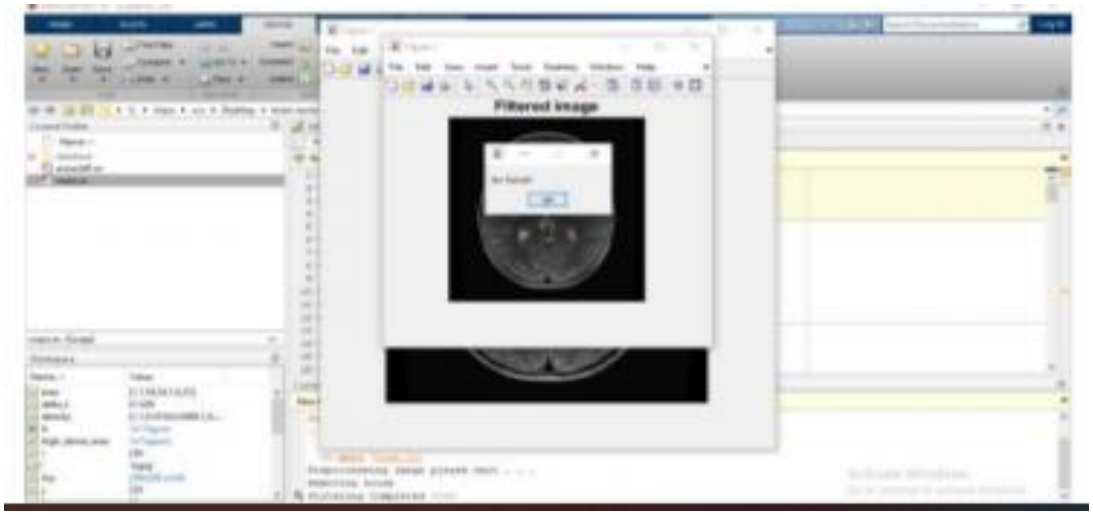

Figure 6 Filter Image

4. PERFORMANCE ANALYSIS

The exisiting and proposed system are analysed. The problem identified in exsiting is there are websites for the brain tumor detection applications which provide details about the brain tumor, but in those the user cannot register his problem so that the nearby doctors would approach him in some or the other way. A person who wants to attend the hospital for the brain tumortreatment has to go and visit only that particular hospital place physically. This makes him a main problem to travel again and again. The existing applications mainly focus on information displaying about the brain tumor and display the details of the e hospitals. Most of the applications available provide information only about the problem, there is no classified information about the detection without visiting the hospital.This assumption has prevented them from automating.Nearly 70% performance has been

increased

5. CONCLUSION

we have developed an open source software to distinguish normal and abnormal brain MRIs. We are working on GUI, which is user friendly. It consist of eight steps, namely Input image, RGB to Grey, Edge Detection, Histogram, Thresholding, Segmentation and Tumor identify. Here several methodologies are exist for brain tumor detection of MRI image

6. FUTURE ENHANCEMENTS

The system can be further modified for the tumors which are having more fuzzier edges. By far deep neural networks, in particular convolution networks are rarely used in boundary detection problems. Hence, in future such neural networks can be proposed for this state of art application. Further this system can be extended for 3D boundary detection of brain tumor

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