IJARCCE

ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified
Vol. 5, Issue 7, July 2016

A Review on Detection Techniques in Medical Imaging

Priyanka Pareek[1], Pankaj Dalal[2]

M.Tech Scholar, Department of Computer Engineering[1]

Professor, Department of Computer Engineering[2]

Abstract: Various researches are going on in the field of medical image processing. In this paper we have done a comparative study of various computer based abnormity detection method in medical image processing. This paper also discusses about various algorithms proposed by researchers time to time in this area of medical imaging. This study is helpful for better use of new existing method and improving the performance of object detection.

Keywords: Region growing, MRI, segmentation, Texture analysis, Edge detection etc.

I. INTRODUCTION

Now a days in medical imaging is passing through challenging age to compare scan images of parts of our body easily and clearly. Object image is difficult to identify in normal image so MRI images are use for this purpose. In MRI images researches apply many method and algorithm for object detection like morphological algorithm, clustering algorithm, Pillar K-means Algorithm, segmentation method, artificial neural network technique, object detection using watershed and thresholding segmentation.

II. LITERATURE SURVEY

In 2015 Eman Abdel-Maksoud and others are used the image segmentation techniques based on clustering to detect the object in complicated part of body brain and find the affected area. They are used the K-means and C-means clustering algorithm together for detection of affected area of the brain accurately with minimum execution time. Their framework comprises of four stages: pre-processing (skull evacuation and de-noising), grouping (mix of K-Means and Fuzzy C-means), extraction and shaping (thresholding and level set), and acceptance stages. But it is not efficient to detect the affected area abnormity when it is light dense.[1]

In 2015 A. Sindhu et.Al., presented different image preparing systems for recognizing affected area in MRI image. Four parts they examined in MRI images to enhance the execution, arrangement and precision of identifying the brain affected area.
They are Pre-processing, segmentation, feature extraction and characterization. They introduce the outline of different images processing techniques amongst the current frameworks furthermore shows the discovering rate of the strategies and demonstrated the different precision rate. Be that as it may, they can't recognize the variety of affected area in MRI which will give more effective results [2].

In 2015 U. Vanitha et.Al, Proposed morphological image processing to distinguish the affected area from the brain either malignant or non-malignant disease. This technique is essentially used to identify the difference in the tissues which have a much better technique when contrasted with computed tomography. So this makes this strategy an exceptionally unique one for the brain disease affected area discovery. They utilize the morphological operations like dilation; erosion etc. was done to expel the affected area from the MRI Image. In which they utilize the erosion (morphological algorithm) forget the affected area out [3].

In 2014 Ed-Edily Mohd. Azhari et. Al proposed a programmed brain affected area discovery and confinement system that can distinguish and restrict brain affected area in attractive reverberation imaging. The proposed brain affected area discovery and limitation structure includes five stages: image securing, pre-processing, edge detection, modified histogram clustering and morphological operations, past to morphological operations, affected area show up as clean white colour on pure dark black background. They used 50 neuro image to improve the system and 100 out-of-test neuron image to test the system. The proposed brain affected area detection and localization system was able to precisely distinguish and confine brain affected area in magnetic resonance imaging. This system accomplished a blunder rate of 8%.

Aslam A. H. et al. in 2013 demonstrated another way to deal with image segmentation utilizing Pillar K- means method. This segmentation technique incorporates another mechanism for grouping the components of high resolution images keeping in mind the end goal to enhance exactness and diminish the computation time. The framework utilizes K-means for image segmentation upgraded by the calculation after Pillar.
The Pillar algorithm considers the arrangement of Pillars ought to be situated as a long way from one another to oppose the pressure distribution of a roof, as same as the

IJARCCE
ISSN (Online) 2278-1021
ISSN (Print) 2319 5940
International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified
Vol. 5, Issue 7, July 2016

quantity of centroids between the information appropriation. This calculation can streamline the K-means clustering for image segmentation in the parts of precision and calculation time [5].
Saptalakar B.K. et al. in 2013 depicts the identification of the brain affected area by segmentation and extraction of the identified affected area by filling the disease affected area district with gaps. The proposed strategy can be proficiently connected to identify and separate the cerebrum disease affected area from MRI images gotten from patient's information base [6]. Segmentation is done using watershed algorithm whereas disease affected area detection is done by comparing both hemispheric part of the brain.

In 2013 Kamal Kant Hiran demonstrated an Artificial Neural Network based technique for Brain Tumour Detection, which gave the edge design and segment of brain and brain disease affected area itself. Researcher outlines extensive lab work for artificial neural network based Brain disease affected area classification utilizing MR image. The present method detects disease affected area range by darkening the disease portion and enhances the image for identification of other brain diseases in human being. The presented work exhibits that the method can effectively detect the brain disease affected area and in this manner helps the specialists for detecting disease affected area size and region.[7]

In 2012 Anam Mustaqeem et. Al developed system of 3D division of a brain disease affected area by using segmentation as a piece of conjunction with morphological operations. This examination was coordinated to recognize brain disease affected area using helpful imaging frameworks. The standard procedure used was segmentation, which is done using a framework in light of edge division, watershed segmentation and morphological operations. The proposed division methodology was attempted diverse things with MRI inspected picture of human brains: thus discovering disease affected area in the picture. Tests of human brains were taken, analysed using MRI process and after that were taken care of through segmentation systems in this way giving compelling choosing results. This methodology gives capable results when appeared differently in relation to past explores. Tests are associated on different images and results were surprising. These proposed examination is anything but difficult to execute and in this way can be overseen effortlessly however troublesome shading based segmentation of 3D images [8].

In 2012 V.P.Gladis Pushpa Rathi et.AL Proposed feature selection based system for identifying brain disease affected area. Their methodology consolidates the Texture, Intensity, shape based elements and groups the disease affected area as white matter, Dark matter, CSF, unusual and normal zone. The analysis has been performed on 140 disease affected area contained brain MR images from the Internet Brain Segmentation Storehouse. The proposed framework use Support Vector Machine (SVM) for grouping. Here they utilize two stages for arrangement one is SVM without nonstop training another is SVM with continuous training. The proposed system has been completed over a bigger database as contrast with any past work and is more powerful and compelling. PCA and Direct Discriminate Examination (LDA) were connected on the training sets. The SVM classifier served as a correlation of nonlinear strategies versus linear ones [9]. PCA and LDA techniques are utilized to decrease the quantity of components utilized. The feature selection utilizing the proposed system is more gainful as it examinations the information as per gathering class variable and gives decreased list of features with high classification precision.

In 2011 Mukesh Kumar et.AL proposed a composition based examination to recognize variety from the standard in the brain and a automatic locale developing system to section the brain disease affected area. In their proposed system they are merging the two parameters to convey more exact results. Furthermore in this framework there is no need to pick the seed point physically thus there is no need of human intervention. They acknowledge that the mind disease affected area has created in extensive size and their structure may be of any kind, for example, snakelike or round shaped etc. This is area developing section framework for portion of brain disease affected area in MRI; in which it is possible to choose variety from the standard is accessible in the images or not [10].

In 2010 T. Logeswari and M. Karnan proposed a clustering based methodology utilizing a Self Organizing Map (SOM) algorithm for medicinal image segmentation. The proposed segmentation framework contains two stages. In the first stage, the MRI brain image is secured from patient database. In that film artifact and noise are evacuated. In the second stage (MR) image segmentation is to decisively perceive the foremost tissue structures in these image volumes. A self-organizing map comprises of parts called nodes or neurons. Connected with every node is a weight vector of the same measurement as the input data vectors and a position in the map space. The standard arrangement of nodes is a regular spacing in a hexagonal or rectangular grid. [11].

III. CONCLUSIONS AND SCOPE OF INVESTIGATION

This paper describes distinctive image processing techniques for distinguishing abnormities in MRI images of human brain. This paper introduces the review of different image handling procedures among the current frameworks furthermore shows the discovering rate of the strategies and demonstrated the diverse exactness rate. Future assessment lead towards enhancing the precision furthermore it should be possible more progressed identifying the tumor of different shapes and growth can be analyzed. This paper demonstrates the MRI Image containing disease affected area which can likewise characterize the disease affected area. This work will be

IJARCCE

ISSN (Online) 2278-1021
ISSN (Print) 2319 5940

International Journal of Advanced Research in Computer and Communication Engineering
ISO 3297:2007 Certified
Vol. 5, Issue 7, July 2016

reached out for to identify and reenact different sorts of disease affected area in 3-D environment which will give more productive results to specialists, radiologists and so forth.

REFERENCES

[1] Eman Abdel-Maksoud, Mohammed Elmogy,Rashid Al-Awadi, Brain tumor segmentation based on a hybrid clustering technique, Egyptian Informatics Journal, Volume 16, Issue 1, pp. 71–81, 2015.
[2] A.Sindhu, S.Meera, A Survey on Detecting Brain Tumour in mri Images Using Image Processing Techniques, International Journal of Innovative Research in Computer and Communication Engineering, Vol. 3, Issue 1, 2015.
[3] U.Vanitha, P.Prabhu Deepak, N.Pon Nageswaran, Tumor Detection In Brain Using Morphological Image Processing, Journal of Applied Science and Engineering Methodologies, Vol. 1, No.1, pp. 131-136, 2015
[4] Ed-Edily Mohd. Azhari, Muhd. Mudzakkir Mohd. Hatta, Zaw Zaw Htike, Brain Tumor Detection And Localization In Magnetic Resonance Imaging, International Journal of Information Technology Convergence and Services, Vol.4, No.1, 2014
[5] Hakeem Aejaz Aslam, Tirumala Ramashri, Mohammed Imtiaz Ali Ahsan, A New Approach to Image Segmentation for Brain Tumor detection using Pillar K-means Algorithm, International Journal of Advanced Research in Computer and Communication Engineering, vol. 2, Issue 3, 2013.
[6] B.K.Saptalakar, Segmentation Based Detection Of Brain Tumor, International Journal of Computer and Electronics Research, Vol. 2, Issue 1, 2013
[7] Kamal Kant Hiran, Ruchi Doshi, An Artificial Neural Network Approach for Brain Tumor Detection Using Digital Image Segmentation, International Journal of Emerging Trends & Technology in Computer Science, Vol. 2, Issue 5, 2013.
[8] Anam Mustaqeem, An Efficient Brain Tumor Detection Algorithm Using Watershed & Thresholding Based Segmentation, I.J. Image, Graphics and Signal Processing, DOI: 10.5815/ijigsp.2012.10.05, 2012.
[9] V.P.Gladis Pushpa Rathi, Dr.S.Palani, Brain Tumor MRI Image Classification with feature Selection and Extraction using Linear Discriminant Analysis, IJARCSE, vol. 2 Issue 1, 2012.
[10] Mukesh Kumar, Kamal K.Mehta, A Texture based Tumor detection and automatic Segmentation using Seeded Region Growing Method, Int. J. Comp. Tech. Appl., Vol 2 (4), pp. 855-859, 2011.
[11] T. Logeswari and M. Karnan, An improved implementation of brain tumor detection using segmentation based on soft computing, Journal of Cancer Research and Experimental Oncology Vol. 2(1) pp. 006-014, 2010.