



**INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH
TECHNOLOGY**

**A SURVEY ON IMAGE MINING TECHNIQUES FOR BRAIN TUMOR
CLASSIFICATION**

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ABSTRACT

Brain tumor is the major problem for increase the growth of the development countries. Improve the detection of disease in the medical field image mining techniques is widely use. Detection is necessary for discover the disease at initial stage and giving a proper Treatment for that. It affects many of your body's activities, such as balance, talking, movement, breathing, and heart function. So detection is very necessary to stop or to slow the disease progress and according to the detection proper treatments are given to the patient. In this paper we can discussed about the different methodology of data mining that can be use for diagnosis and prognosis of brain tumor. The important role in medical treatment for the brain tumor is to identify the area of the tumor. So that the image mining techniques is the straight forwarded techniques to identify the area of the tumor base on the MRI images. Image processing is the easy and simple tools of image mining techniques. Because of that generate all significant patterns without prior information.

KEYWORDS: Data Mining, Image Mining, Diagnosis, Prognosis, Brain Tumor, Magnetic resonance imaging (MRI).

INTRODUCTION

Detecting and classified the tumor for different medical images uses the high accuracy because they deals with human life. Today's computer professional can handle this situation very well but in some case false negative cases must be detected or classified at a very low rate. So they suggest that the improvement of the detection for brain tumor is necessary. And it has been proven that double reading of medical images could lead to better tumor detection. So the computer professional interest in this field and introduce the good software to assist the detection of the brain tumor. For creating this approaches they refer different image mining techniques and medical images .The techniques produces those images is very important in order to know what to apply to a certain medical image in order to get better results. There are different type of techniques have been introduce for detecting the brain tumor like MRI (magnetic reasoning images) ,X-rays techniques, radiology techniques , CT (Computed Tomography) ,but all this techniques have some disadvantages and they required some improvement for correct detection of brain tumor. This improvement is necessary because brain tumor is difficult dieses in human life so the accuracy of the detection is very important. The accuracy of the classified and detection of brain tumor is very high and false negative rate must be low. The main aim of this research is to improve the results and reduce the human error which was generated by physicians or radiologists [5]. So they use some software that could lead to better results. When they were produce the better results then automatically we can save the human life [5]. In this paper I will introduce the different image mining techniques for detecting and classified the brain tumor by using the pixel intensity ,size of the images , detection time of images ,there are no widely accepted techniques for automatic and reliable method for detection of brain tumor.

BRAIN TUMOR

Where the brain and spinal column are break from the central nervous system (CNS) then after all the vital function such as thought, speech and body movement are out of controlled. After some time the tumor are increases in CNS then it also effect on the function of the human body. So the detection of the tumor is vary important for controlled the movement of the human body. And it can be done by magnetic resonating imaging (MRI).

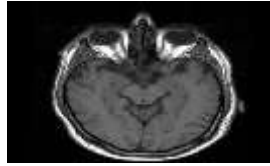


Figure 1.1: Brain MRI IMAGES

MAGNETIC RESONANCE IMAGING

There are different medical test was use for detecting different diagnosis in medical field. MRI is which of them where us to detecting the brain tumor. In MRI the magnetic field and RF (Radio frequency) and computer software are use to produce the images of particular organ which is examine under MRI procedure .MRI produce the different images of human body like internal body parts, soft tissues and born and all this image are observed under the professional computer monitor or transmitted electronically, printed or copied to a CD or Pen drive.

There are basic three types of MRI are available:

- 1) T1-Weighted MRI
- 2) T2-Weighted MRI
- 3) FLAIR MRI

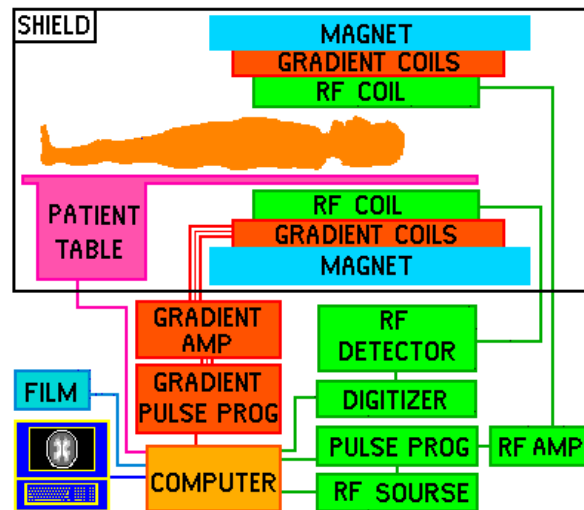


Figure 1.2: MRI machine diagram

LITERATURE REVIEW

The objective of this portion of literature review is to identify the various methodology that could be use to detect the brain tumor [10].There are number of researcher can work on the detection of brain tumor using image mining techniques. In this part of paper present the different techniques that was use for detecting the brain tumor in earlier. Medical Images are mostly noise and uncertainty, so that the challenging performance of the segmentation is the difficult task; so that R.Preetha and G.R.Suresh (2014) was introduce new techniques for good performance of segmenting the tumor tissue. This can be achieving by using the Clustering algorithm .In the fields of the brain tumor detection FCM (Fuzzy C Means) clustering is the robust and effective techniques for feature extraction and classification. In FCM the accuracy of tumor segmentation is identified by implementing SVM classifier [1].

When the tumor is very close to bone, K- Means and Fuzzy c-means segmentation can not segmentation the MRI Images efficiently, so that improvement of the current techniques is necessary with better results .that's why Amitava Halder, Chandan Giri_[2] was introduce a techniques K-means algorithm followed by Object labeling algorithm. These techniques can perform different operation like median filtering and morphological for tumor detection purpose [2].

Where the complicity of the brain tumor is variance then it is difficult to classify the type of the brain tumor so that Kailash Kharat, Pradyumna Kulkarni and M.B.Nagori were introducing techniques that classified the magnetic reasoning images using the neural network. And this techniques can performed in three steps feature extraction, dimensionality reduction, and classification [4]

Maintaining the history of patients, treatment recored, and monitoring f diagnosis is the difficult task. J. Alamelu Mangai and his team introduce a classification framework using the data mining techniques.kNN machine learning classifier is tweaked using a feature weighting scheme and a distance weighted voting scheme ,The association rule mining is calculate the weights [5].

pattern recognition can be done in image mining using the KNN techniques but there are some limitation like calculation complexity , performance is solely , no weight difference between samples dataset so that N. Suguna and Dr. K. Thanushkodi improve the KNN techniques using Genetic Algorithm (GA),so that the classification performance is improve up to 97.92% [6].

The extraction of brain tumor and analysis of brain tumor is the difficult task in medical image processing because the structure of the brain tumor is very complex so that only the expert radiologists can performed this task. Kailash Sinha, G.R.Sinha combine the different techniques for improve the accuracy of detection of brain tumor like k-means clustering with watershed segmentation algorithm, optimized k-means clustering with genetic algorithm and optimized c- means clustering with genetic algorithm [7].

In 3D MR images the Automatic detection and segmentation of brain tumors is the difficult task because of the location, size, primary and metastatic tumors are presented in this images. So overcome to this problem the Chen-Ping Yu and his team introduce a different techniques using Unsupervised algorithm .This techniques can detect the single and multiple tumor form 3 to 28,079 mm³ in volume. and give the 95.30% detection rate[8].

K –Means can get the accuracy up-to 50-86% for detection of brain tumor. But this is not enough in medical filed, so that the Meghana Nagori and his team can decide that decision tree algorithm can get the best results for medical use. They use the supervise algorithm instead of unsupervised algorithm to detect the brain tumor and they can improve the accuracy upto 94.73% using J48 graft algorithm [9].

Operator-assisted classification methods are impractical for large amounts of data and are also non-reproducible inspection. Operator-assisted classification methods are impractical for large amounts of data and are also non-reproducible MR images also always contain a noise caused by operator performance which can lead to serious in accuracies classification. The MR images data is by nature, a huge, complex and cognitive process. Accurate diagnosis of MR images data is not an easy task and is always time consuming. In some extreme scenario, diagnosis with wrong result and delay in delivery of a correct diagnosis decision could occur due to the complexity and cognitive and cognitive

Title	Algorithm	Data Set	Data Collection	Results
Performance Analysis of Fuzzy C Means Algorithm in Automated Detection of Brain Tumor [1]	Fuzzy C means	4 different type of MRI images	radiologists	94.39%
Brain Tumor Detection using Segmentation based Object Labeling Algorithm[2]	K-means and Object labeling algorithm	20 MRI Images	NA	99.78%
Using Data Mining Techniques For Diagnosis And Prognosis Of Cancer Disease[3]	Decision tree	breast cancer	Mammographic Image Analysis Society (MIAS)	93.62%
Brain Tumor Classification Using Neural Network Based Methods[4]	FF-NN + BP-NN	MR +MRS	NA	NA
An Improved k Nearest Neighbor Classifier Using Interestingness Measures for Medical Image Mining[5]	KNN	medical images	Kasturba Medical College	92.85%
An Improved k-Nearest Neighbor Classification Using GA6]	GKNN	Dermatology, Cleveland,	NA	97.92%
Efficient Segmentation Methods for Tumor Detection in MRI Images[7]	k-means clustering and GA	MRI Images	Radiologists of diagnosis center	NA

3d Blob Brain Tumor Detection And Segmentation In MRI[8]	Unsupervised algorithm	3D brain MR images	Dr. R. Kikinis's lab	95.3%
Detection of Brain Tumor by Mining fMRI Images[9]	Clustering algorithms	fMRI images	TATA Memorial Hospital,mumbai	94.73%

FF-NN + BP-NN: feed-forward neural networks and Back propagation neural Network.

MR + MRS: Magnetic Resonance (MR) images and Magnetic Resonance Spectroscopy

KNN: K - nearest neighbor

Table 1 Compression of different approaches used for Detection of Brain Tumor.

PROBLEMS REGARDING TO DETECTION OF BRAIN TUMOR

The ordinary techniques for detecting the brain tumor using MRI images by human inspection. So that detecting false negative rate is increases. So in this research tries to find out the how the images mining techniques is apply for detecting the brain tumor without involving the human operation in this process. In this research I will introduce the new techniques for detecting the brain tumor.

CONCLUITON

Brain tumor is the serious problem in world wide. So that the detection of the brain tumor is important task for the diagnostics and adequate for the treatment of the patient. In this paper we study about the different image mining techniques that are use in detection of the brain tumor. In past year there are many techniques of image mining are introduce for the segmentation of MRI images. But still they have some limitation. Image mining is used for extract the hidden knowledge, finding the pattern which is not clearly in images. So that we can segment the images using image mining techniques. Segmentation is giving the good results on MRI brain images but they do not give the good results for other images for the same type. So that it is a difficult task to achieve good results of segmentation method which are use in the MRI brain images.

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