Industrial Engineering Journal
ISSN: 0970-2555
Volume : 52, Issue 7, July : 2023

BRAIN TUMOR DETECTION AND SEGMENTATION MRI IMAGES USINGMACHINE LEARNING

AJAY KUMAR JEEBU, MCA, DCA, DVR & Dr.Hima Shekar MIC College of Technology, A.P., India.
ANURADHA ANUMOLU, Associate Professor & HOD, Dept.of AI & IT, DVR & Dr.Hima Shekar MIC college of Technology, A.P., India.

Abstract— brain tumor detection and segmentation MRI Images is very useful in recent years. Due to MRI Images, we can detect the brain tumor. For detection of unusual growth of tissues and blocks of blood in nervous system can be seen in an MRIImages.Thefirststepofdetectiono fbraintumoristocheckthesymmetrican dasymmetric Shape of brain which will define the abnormality. After this step the next step is segmentation which is based on techniques. These techniques are used to design the image in MRI. Now with this help of design we can detect the boundaries of braintumorandcalculatetheactualarea oftumor.Thisgivescertaininformation likerebuildingmissingedgesandextrac tingthesilentedges.Accuracyandclarit yinanMRIImagesare dependent on each other.

INTRODUCTION

In primary stage the tumor can be removed but in secondary stage, the tumor disease spreads, due tothis after removal of tumor the seldom remains and grow back again so this is the biggest problem in the secondary stage of tumor.

Why does this problem occur? It occurs due to the inaccurate location of the area of tumor. The next step is detection techniques. In this the any segmentation and detection are to measure detection techniques the imaging of brain tumor can be done by

1) MRI scanning that is magnetic resonant image
2) CT scanning i.e., computer tomography

Ultra sound etc Searchable Encryption (SE) is an important technique to guarantee data security and usability in the cloud at the same time. Cloud computing is the use of computing resources (hardware and software) that are delivered as a service over a network (typically the Internet). The name comes from the common use of a cloud-shaped symbol as an abstraction for the complex infrastructure it contains in system diagrams. Cloud computing entrusts remote services with a user's data, software and computation. Cloud computing consists of hardware and software resources made available on the Internet as managed third-party services. These services typically provide access to advanced software applications and high-end networks of server computers.

The goal of cloud computing is to apply traditional supercomputing, or high-performance computing power, normally used by military and research facilities, to perform tens of trillions of computations per second, in consumer-oriented applications such as financial portfolios, to deliver personalized information, to provide data storage or to power large, immersive computer games.The cloud computing uses networks of large groups of servers typically running low-cost consumer PC technology with specialized connections to spread data-processing chores across them. This shared IT infrastructure

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contains large pools of systems that are linked together. Often, virtualization techniques are used to maximize the power of cloud computing.

LITERATURE SURVEY

In [1] authors proposed a hybrid approach for detection and classification of brain tumors. The hybridapproach involves four phases in which skull is detected in the first phase. In the second phase, theyextracted the feature using grey level cooccurrence maintain. In the third phase, least square SupportVector Machine is used to classify the type of a tumor whereas in final phase segmentation was done.SVMresultsinan accuracyof5.6%whencomparedwith (RBF)RadialBasisFunction andBP(WW).

In [2] authors proposed a neural network approach for detection of a brain tumor. Their approachinvolved noise reduction in MRI images, adaptive Thresholding techniques, segmentation the imageusing canny edge detection and classification using backpropagation as a base classifier. Their approachresultedin an accuracy of 90%inclassifying the tumors comparedto conventional method.

In[3]authorsproposedatwo-stepapproachfordetectionandclassification ofbraintumorsanLCMis used for feature extraction whereas k-nearest neighbour classifier is used for classifying the tumors.Their results showed that K-NN has achieved highest accuracy of 96.15 when compared with otherclassifierslike backpropagation neuralnetwork, Radial basis,DWT and PCAANN.

PROBLEM DEFINITION

To design an efficient brain tumor detection technique using Machine Learning. The conventionalmethod for tumor detection in magnetic resonance brain images is human inspection. The observationfrom humans in predicting the tumor may mislead due to noise and distortions found in the images.

PROPOSED METHOD Describes an approach for the order of MRI images, that depends on the back propagation of neuralsystemprocedure.Thestrategyis builtusingthetechniquesofimageenrichment,segmentation,registration,characterrecognition,andsegregation.Duringthesegmentationprocedure,themorphologicaloperationsandthresholdvaluesareconsidered.Thesetrainingimagesandexperimentare analyzed by a neural network technique of back propagation algorithm to the recognition of thepresenceofatumor.useslogisticregressionforclassificationoftumor,whereitalsousesPCA(principal component analysis) in the phase of training and testing the data, it uses SVC (support vector classifier) for detection of positive or no tumors for the given input images. And uses some filters for presenting better output all the data of this is extracted from the dataset.

Advantages of proposed system

- Automated tumor detection methods are developed as it would save radiologist time.
- Time complexity is improved upto greater extent.
- Easy to understand and adapt the application.
- High accuracy and efficiency is obtained.

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- More number of patients test scan be done in a single day.
- They don't have to put much effort in data entry process.
- Print scan be generated according to our required format.

IMPLEMENTATION

Image Acquisition: First considered that the MRI scan images of a given patient are eithercolor,Gray-scaleorintensity images herein aredisplayedwith a defaultsizeof 220×220.

is color image, a Gray-scale converted image is defined by using a large matrix whose entries arenumerical values between 0 and 255, where 0 corresponds to black and 255 white for instance. Thenthe brain tumor detection of a given patient consist of two main stages namely, image segmentationandedgedetection.

Pre-processing stage: Pre-processing stage consists of Noise removal this can be done by usingvarious spatial filters linear or nonlinear filters (Median filter). Other artifacts like text removed bysome morphological operations. RGB to grey conversion and reshaping also takes place here. Itincludesmedianfilterfornoiserem oval.Thepossibilitiesofarrivalofnoi seinmodernMRIscanarevery less.It may arrivedueto thermalEffect.

Image Smoothing: It is the action of simplifying an image while preserving important information.The goal is to reduce noise or useless details without introducing too much distortion so as tosimplifysubsequent analysis.

Image Segmentation: The segmentation is the most important stage for analyzing image properlysince it affects the accuracy of the subsequent steps. However, proper segmentation is difficultbecauseofthegreatveritiesofthelesionsh apes,sizes,andcolorsalongwithdifferentskintyp esand textures.

SAMPLE RESULTS

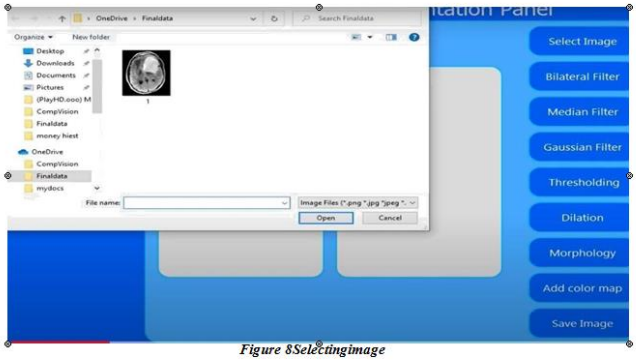
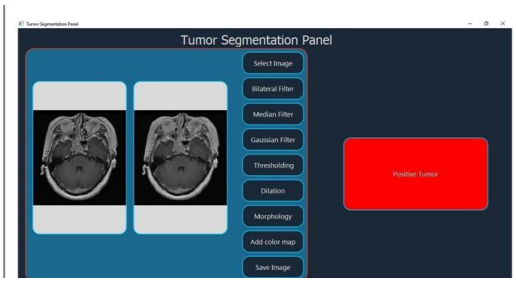


Figure 8Selectingimage



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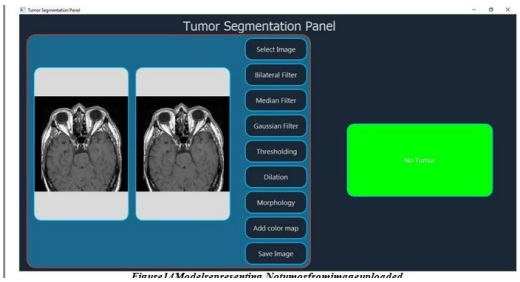

CONCLUSION

- In this paper, we proposed Machine Learning approaches playing virtual role in brain tumor detection. They find the tumorif present and also some other features of brain tumor like shape of the tumor, size of the tumor,locationofthe tumor andtype ofthe tumoretc.
- InmedicalimagingROI(Region ofInterest)andNROI(Non-RegionofInterest)aretheimportantpartforthebraintumordetection.Theregioninwhichtumoris presentisROIandtheother isNROI.

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Author’s profile:

M r Jeebu, as MCA student in th f IT at DVR &Dr.HS MIC C echnology, Kanchikacherla ,NTR(District). He has completed BSC from KRISHNAUNIVERSITY. HIS area interests are python, machine learning, java.

Mrs Anuradha Anumolu completed her M.Tech (CSE) from Acharya Nagarjuna University. She has published more than10 papers in indexing Journals, currently working as an Associate Professor and Head in the department of AI & IT at DVR & Dr HS MIC College of Technology (Autonomous), Kanchikacherla, NTR District. Her areas of interest are Data Structures, Data Mining, Cloud Computing, Artificial Intelligence.