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Scanned Image Segmentation and Detection Using MSER Algorithm

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ABSTRACT: A Drowsy Driver Detection System has been developed, using a non-intrusive machine vision based concepts. Distracted driving is one of the main causes of vehicle collisions in the world. Passively monitoring a driver's activities constitutes the basis of an automobile safety system that can potentially reduce the number of accidents by estimating the driver's focus of attention. This project proposes an inexpensive vision-based system to accurately detect Eyes Off the Road (EOR). The system uses a small Raspberry Pi camera that points directly towards the driver's face and monitors the driver's eyes in order to detect fatigue. In such a case when fatigue is detected, a warning signal is issued to alert the driver. This report describes how to find the eyes, and also how to determine if the eyes are open or closed. The system deals with using information obtained for the binary version of the image. The eye regions in the face present great intensity changes, the eyes are located by finding the significant intensity changes in the face. Once the eyes are located, measuring the distances between the intensity changes in the eye area determine whether the eyes are open or closed. If the eyes are found closed for 5 consecutive frames, the system draws the conclusion that the driver is falling asleep and issues a warning signal.

KEYWORDS : Scanned image, embedded noise, Median filter, MSER algorithm.

I. INTRODUCTION

In imaging science, image processing has the processing of images using the mathematical operations by any form of signal processing for which the input is an scanned image or medical images, , such as MRI images. The output of the scanned image will gives us required result of the diseased portion. These characteristics or parameters related to scanned image have an appropriate algorithm. Image processing usually refers to digital image processing, which has major two types are optical and analog image processing are also possible. Detecting disease from a scanned images obtained or used should be of displayed in a two dimensional matrices which will have the number of pixels as its elements. Images are stored in Mat lab and converted (if not already) to be displayed as a grey scale image of size 256*256. The image enhancement that the study is interested in should yield the result of more prominent edges and a sharpened image; noise will be reduced thus reducing the blurring or salt and pepper effect from the image that might produce errors. Morphological operation involves dilation and erosion. Dilation combines two sets using vector addition. This will give the result of percentage of the tumor tissue increased in the brain. Different brain imaging technologies are used worldwide to diagnose brain tumor. Nowadays these technologies provide needful information to researchers and doctors about the normal and abnormal tissues inside the brain. Magnetic Resonance Imaging (MRI) uses magnetic field to diagnose any change inside the brain and provide high quality results. Another method for checking abnormalities tissues in brain by Computed Tomography (CT) uses radiations.

The advantage of MRI over CT scan is that it is not harmful to human health. We have used MRI images in our paper to detect brain tumor. Medical image processing utilizes computer and MRI images to diagnose various types of tumors and other diseases. In this paper we able to detect a skin disease which is one of the most common diseases in humans and its incidence are increasing dramatically in present. Skin cancer is very common diseases and caused by wound happened in the skin. Therefore early diagnosing is a crucial issue for patient. However, only experienced doctor is able

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to classify the skin cancer also from other skin diseases. Nowadays technology has improved for detecting the skin cancer by computer based detection which is necessary to provide quick report on the user. It is well-known that early finding and treatment of skin cancer can reduce the percentage and effect on the patients. In skin cancer most effective and high cost to identify the cancer is by Digital Dermoscopy. Since skin cancer caused for variety of lesions shapes, sizes, and colors along with skin types and textures. In skin cancer they adapt top most layer only but the scanned image gives us detailed discussion about the cancer region.

During the past technologies, various contributions have been made in many fields to detect the disease regarding the application of pattern techniques for dead skin or brain diagnosis in cell level. In this paper we have applied embedded a noise along with median filtering, image segmentation and operations to detect brain tumor and skin cancer to calculate the size/volume of the tumor and cancer detection. Also we able to refer the percentage of affected area and accuracy of disease content.

II. EXISTING SYSTEM

In existing system they majorly used to find the disease part whether tumour is present or not. As they have referred the technique that used are Clustering techniques it is a group of pixels which have similar relationship that to be considered as cluster. Clustering is also known as not able to connect the required region classification technique. In this classification algorithm automatically classifies objects based given criteria by user. Here K-means clustering algorithm has the major part in detecting the disease in the scanned image portion which is followed by morphological filtering is used for tumour detection from the brain MRI images and also for other scanned images. MRI scanned images of the human brain is the input image for existing system.

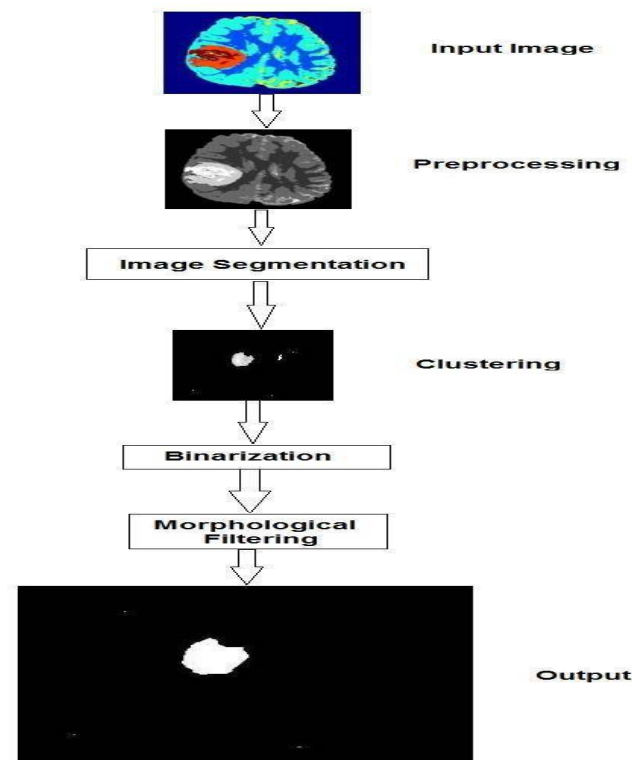


Fig 1: Proposed system architecture

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In the existing field the pre-processing stage will convert the RGB input image to grey scale images. The main filter used in the existing field was 2D-adaptive filter is used to remove the noise present if any. The pre-processed images are given for image segmentation using K-means clustering algorithm. If there exists any misclustered regions it may apply the algorithm referred as K-means clustering algorithm. After the image is segmented there is a technique called morphological filtering which is performed after algorithm. The main aim of morphological filtering is that it removes these misclustered regions in the system. Image segmentation is the process that subdivides an image into its constituent parts or objects. To solve the problem the level to which this subdivision is carried out depends on it. Image thresholding techniques are used for image segmentation. In thresholding it makes the simple and effective way of partitioning an image into a foreground and background.

In these systems they have referred only the disease is present or not. Hence they have some drawback in filtering process that make an outlook of an image in the major part known as disease area. Since they have a separate portion to develop the diseased part but them unable to apply the affected region and accuracy.

III. PROPOSED SYSTEM

In our proposed system images like medical usage should be resized into 255 * 255 size of image. Because this size is comfortable to process the edge detection, analyzing the noisy content in the image. Due to the image conversion around the 255 * 255 for processing the image as 0 to 255 pixels. Mostly MRI images of brain contain more white spaces then the normal MRI brain image. Also other images in any other body part can make this step for further process. Comparison of white pixels and black pixels of both the normal and Tumor image will help to find the stage of the tumor occurred in the brain. Grey scale image conversion is required for processing the white and black analyzing. The grey scale image conversion also gets the same pixel sized image. Image segmentation will give the pixel of image that mean $m*n$ which symbolized as rows and column. Grey scale image is better to process the image. The colour

IV. HARDWARE DESCRIPTION

The eye tracking system is based on intensity changes on the eye, it is crucial that the background does not contain any object with strong intensity changes. Highly reflective object behind the driver, can be picked up by the camera, and be consequently mistaken as the eyes. Low surrounding light (ambient light) is also important, since the only significant light illuminating the eye should come from the drowsy driver system. If there is a lot of ambient light, the effect of the light source diminishes image which made noisy image using the salt and pepper method. This method is fine to get the noisy content of the image. The noise is reduced from the noisy image using the median filter. Many other filters used to reduce the noise content in the image like Gaussian filters. But the median filter will exactly reduce the noise content at foreground and background of a scanned image. The noise reduction method gives the image with the serious contents analyzing in that.

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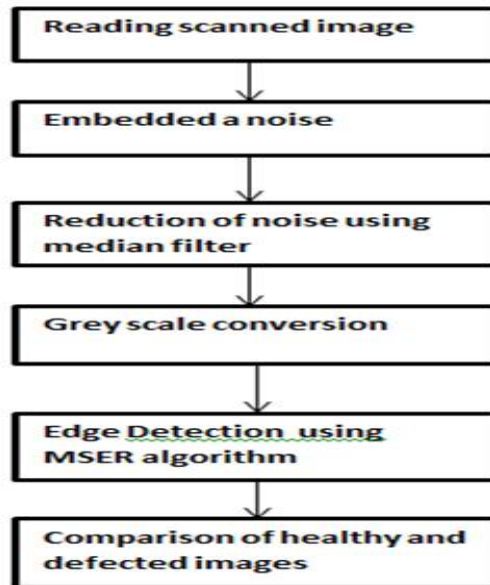


Fig 2 :Flow diagram of proposed system

V. RESULTS AND DISCUSSIONS

Edge detection is used to find the high contrast image content. This edge detection will give the amount of the tumour covered in the brain area clearly also in a cancer content image. This will separate the correct tumor area outline. This is a calculation of both white content and black content of the image in both normal and tumor image. Edge detection is the most vital part in tumor detection. It is used to determine the boundaries of the object. In our proposed system, MSER [maximally stable extreme regions] edge detection algorithm is used. Four steps in MSER algorithm: 1. detecting the disease affection region. 2. The detected region must be extracted by boundary region. 3. Thresholding process is followed by remove edges based on threshold values determined. 4. Extremely region was able to found.

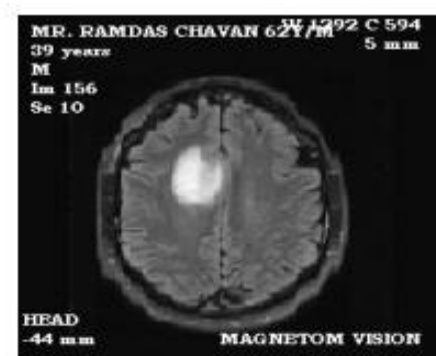


Fig. 1 MRI image of tumour affected brain

Fig 3: MRI image of tumor affected brain

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According to the white pixel content highlight the percentage level of tumour in the brain as well as in the cancer image. This module gives subplot graph of the pixel concentration of image. This concentration for both the black and white pixels. This subplot will give clear view of amount of white pixel increased in different stages of tumour. Using this method we analyze the tumour tissues in brain clearly and this lead to way for tumour treatment. MATLAB is a tool for processing the image of both normal brain image and tumour brain image.

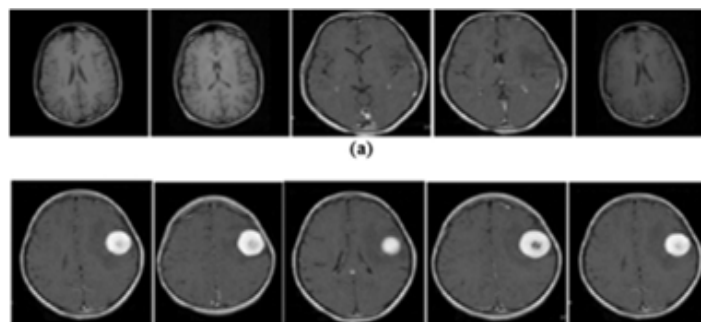


Figure 4 Tumor detecting in a scanned image

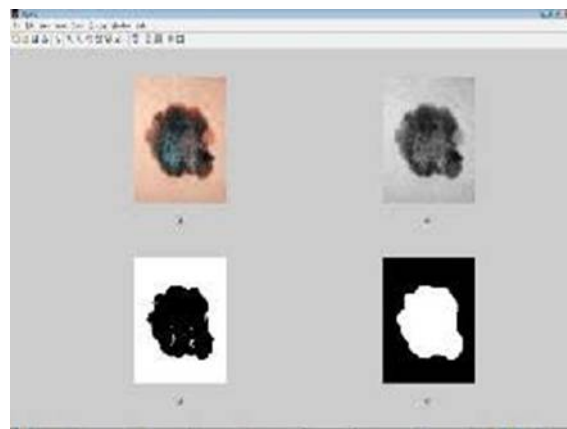


Figure 5 Skin cancer detection image

The MSER extraction implements the following steps: Sweep threshold of intensity from black to white, performing a simple luminance thresholding of the image. Extract connected components (“external Regions”). Find a threshold when an external region is “Maximally Stable”, i.e. local minimum of the relative growth of its square. Due to the discrete nature of the image, the region below / above may be coincident with the actual region, in which case the region is still deemed maximal. Approximately regions with an ellipse keep those regions descriptors as features. Extremal regions have the important properties that the set is closed under continuous (and thus projective) transformation of image coordinates, i.e. it is affine invariant and it doesn't matter if the image is warped or skewed. Because the regions are defined exclusively by the intensity function in the region and the outer border, this leads to many key characteristics of the regions which make them useful.

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VI.CONCLUSION

In this paper a MSER algorithm edge detecting tool for medical images is proposed. The tool is developed in MATLAB and is user friendly. The aim of this paper is to describe and develop a technique which provides various functions like image segmentation, and edge detection reading a medical image of different format. In this paper, the edge detecting algorithms were proposed for image segmentation. These algorithms were tested on brain MRI images, skin cancer images and for further diseased images. The performance of these algorithms is found out in an edge detecting process. The computational results showed that the MSER algorithm has consumes less time and it performs better than the K means clustering algorithm. We compare the segmentation performance in brain tissues and other diseased images. In further the future work may be based on the levels of cholesterol content in the body and diabetics is present or not.

REFERENCES

- [1] E. Murphy-Chutorian and M. M. Trivedi, —Head pose estimation in computer vision: A survey,| Pattern Analysis and Machine Intelligence, IEEE Transactions on, vol. 31, no. 4, pp. 607–626, 2009.N. Alexandratos and J. Bruinsma, *World Agriculture Towards 2030/2050:The 2012 Revision*. Quebec City, QC, Canada: Food and Agriculture Organization of the United Nations, 2012.
- [2] R. Hassanpour and V. Atalay, —Delaunay triangulation based 3d human face modeling from uncelebrated images,| in Computer Vision and Pattern Recognition Workshop, 2004. CVPRW'04.Conference on. IEEE,2004, pp. 75–75.
- [3] Matsumoto Y, Zelinsky A (2000) An algorithm for real-time stereo vision Implementation of Head pose and gaze direction measurements. In: Proceedings of IEEE 4th international conference on face and gesture recognition, pp 499–505
- [4] Yuille AL, Hallinan PW, Cohen DS (1992) Feature extraction from faces using deformable templates. Int J Comput Vis 8(2):99–111
- [5] Sommer G, Michaelis M, Herperts R (1998) The SVD approach for steerable filter design. In: Proceedings of international symposium on circuits and systems 1998, Monterey, California, vol 5, pp 349–353
- [6] Yang G, Waibel A (1996) A real-time face tracker. In: Workshop on applications of computer vision, pp 142–147
- [7] Loy G, Zelinsky A (2003) Fast radial symmetry transform for detecting points of interest.IEEE Trans Pattern Anal Mach Intell 25(8):959–973.
- [8] Iwins JP, Porrill J (1998) A deformable model of the human iris for measuring small-dimensional eye movements. Mach Vis Appl 11(1):42–51
- [9] Kawato S, Tetsutani N (2002) Real-time detection of between-the-eyes with a circle frequency filter. In: Asian conference on computer vision.