

IMPLEMENTATION OF LIVER CANCER USING LABVIEW

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Abstract- The diagnosis of liver cancer is more difficult. The tests most often to screen for liver cancer are the alpha-fetoprotein blood test and ultrasound of the liver. Both the tests not suitable for liver cancer detection. In this paper, the detection of liver cancer can perform using CT scan Image for precise information about the size, shape, and the place of any tumor in liver. In this paper classification of liver cancer is carried out by Lab VIEW software. This technique will help to improve the appearance of classified Image and detection of cancer tissue in liver image.

Keywords-CT Liver cancer, LABVIEW, Machine vision software.

I. INTRODUCTION

Medical imaging is the technique and process of creating visual representation of the interior of a body for clinical analysis and medical intervention. Medical image also establishes a database of normal anatomy and physiology to make it possible to identify abnormalities. Among the various imaging technologies like X-ray, MRI etc ... In this paper CT (computed Tomography) image has been classified. CT scan is quick and painless, it can help diagnose and guide treatment for wider range of condition. It can detect or exclude the presence of more serious problems also it can be used to check if a previously treated disease had recurred. CT scan can highlight anatomical features. The liver structure, including liver surface and lesion localization, is usually required in liver diagnosis. Hepatitis A, B, C, Long term alcohol consumption, Acetaminophen overdose, and malnutrition may cause Liver cancer. At earlier symptoms instead of and cost of detection of liver cancer.

Aaron Fenster et al,[1] described about the limitations in 2D viewing of 3D anatomy. Conventional ultrasound images are 2D, yet the anatomy is 3D, hence the diagnostician must integrate multiple images in his mind. This practice is inefficient, and may lead to variability and incorrect diagnoses. The 2D ultrasound image represents a thin plane at some arbitrary angle in the body. It is difficult to localize the image plane and reproduce it at a later time for follow-up studies.

Gabriela Castellano et al,[2] explained the analysis of texture parameter is a useful way of increasing the information obtainable from medical image. The segmentation of specific anatomical structures and the detection of lesions, to differentiation between pathological and healthy tissue in different organs. Texture analysis uses radiological image. In their article they clarify the principals of texture analysis and explains give examples of its applications, reviewing studies of the technique.

Laurent Massotier et al,[3] explained about the new segmentation method using robust algorithm which is used to increase the speed of the segmentation process.

Neerajharna et al,[4] provides details of automated segmentation methods, specifically discussed in the context of CT and MRI images. Their motive is to discuss the problems encountered in segmentation of CT and MRI images, and the relative merits and limitations of methods currently available for segmentation of medical images.

II. METHODOLOGY

In this paper first step is to analyzing the liver image in vision mission tool. The flow of process is shown fig 1. In that first have to acquire the CT image for further operation.

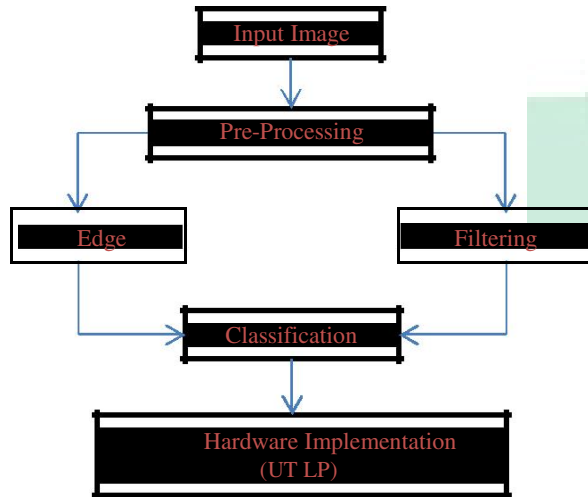


FIG.1.Flow Chart of image processing technique

The liver image for this paper is collected from scan center and simulated image collected from publically available database are used in image classification. These are raw images which is not suitable for image analysis due to vary types of noise present in the image. Hence, suitable preprocessing technique needed to enhance the quality of an image. To enhance the quality of an image first we find the length and area of a liver.

A mask is a black and white image of the same dimensions as the original image or the region of interests us working on. Each of the pixels in the mask can have therefore a value of 0 (black) or 1 (white). When executing operations on the image the mask is used to restrict the result to the pixels that are 1 (selected, active, and white) in the mask. In this way the operation restricts to some parts of the image. There are two types of masks: layer mask which is pixel depended (described above) and vector mask which is a path that clips out the contents of the layer and is pixel independent. It is much easier to edit vector mask by the way using path anchor points.

Edge Detection is the name or a set of mathematical methods which aim at identifying points in a digital image at which the imagebrightness changes sharply or, more formally, hasdiscontinuities. The points at which image brightness changes sharply are typically organized into a set of curved line segments termed edges. In the ideal case,the result of applying an edge detector to an image may lead to a set of connected curves that indicate the boundaries of objects, the boundaries of surface markings as well as curves that correspond to discontinuities in surface orientation. Thus, applying an edge detection algorithm to an image may significantly reduce the amount of data to be processed and may therefore filter out information that may be regarded as less relevant, while preserving the important structural properties of an image. If the edge detection step is successful, the subsequent task of interpreting the information contents in the original image may therefore be substantially simplified. However, it is not always

possible to obtain such ideal edges from real life images of moderate complexity.

Classification, an image analysis approach for automated detection, segmentation, and classification of particular cells, specially the cancer cells from normal cells. In this technique can also count the number of defected cells and find their position with image processing. The results of this analysis are useable in designing a neural network for more accurate analysis. The particular cells segregation is the most important property of this work. Using the Lab VIEW Software gave practical usages to this image processing system because it can communicate with other equipment's used in this system and controls them in order to have an automatic system. This demonstrates the potential effectiveness of such a system on diagnostic tasks that require the classification of individual cells. For the detection and diagnosis of cancer from microscopic biopsy images, the histopathologists normally look at the specific features in the cells and tissue structures. The various common features used for the detection and diagnosis of cancer from the microscopic biopsy images include shape and size of cells, shape and size of cell nuclei, and distribution of the cells. The brief descriptions of these features are given as follows. (A) Shape and Size of the Cells. (B)Size and Shape of the Cell's Nucleus. (C)Distribution of the Cells in Tissue

III. SOFTWARE IMPLEMENTTION

Designed to simplify creation of machine vision applications with a step-by-step guide that automatically generated Lab VIEW virtual instruments (VIs), the IMAQ Vision Builder 6.0 software automatically launches Lab VIEW, which, in turn, automatically draws the VI. The software allows users to create vision apps without programming. And with IMAQ Vision 6.0, which is being released with IMA Q Vis ion Builder 6.0Now, the software opens automated visual inspections to color apps. Color pattern matching quickly locates known reference patterns in a color image and overcomes roadblocks presented by traditional monochrome cameras that have difficulty discerning color images.

IV. RESULT AND DISCUSION

The result of classification of liver cancer of the clinical datasets was assessed first visually and then quantitatively. The following image shown the result of steps in liver cancer CT Image classification process.

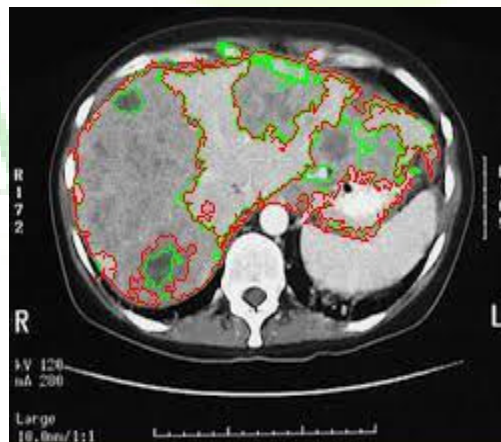


FIG 2.Area of the liver

This figure specify the areas of liver affected by cancer using NI vision. The red color line in effected part of the liver. The green color line in particularly damaged part of the liver.

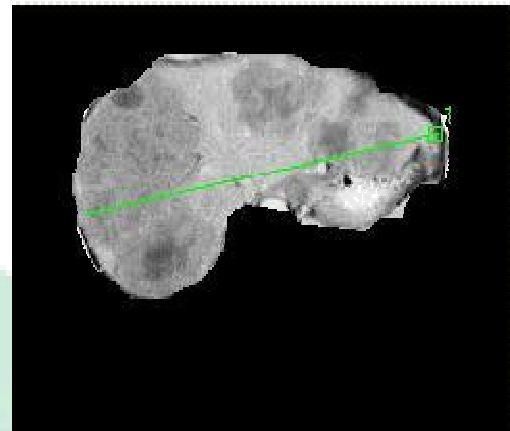
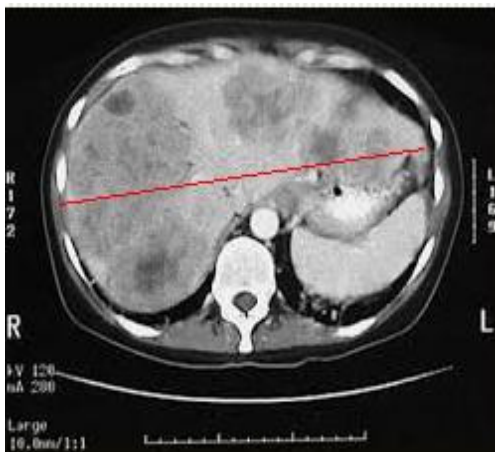


FIG 3.Length of the liver

This is the image to shown the total length of the liver Length

Length =185.69060 pixels Start X=29

Start Y =63	End X =213End Y =88
Red Mean =	169.25000
Red StdDev =	19.06831
Red Min =	104.00000
Red Max =	217.00000
Green Mean =	169.25000
Green StdDev=	19.06831
Green Min =	104.00000
Green Max =	217.00000
Blue Mean =	169.25000
Blue StdDev =	19.06831
Blue Min =	104.00000
Blue Max =	217.00000

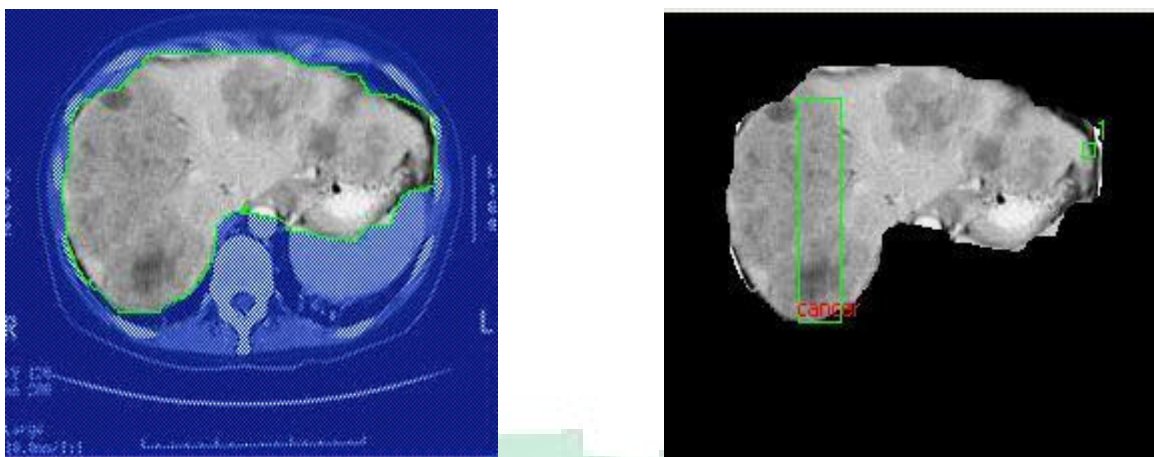
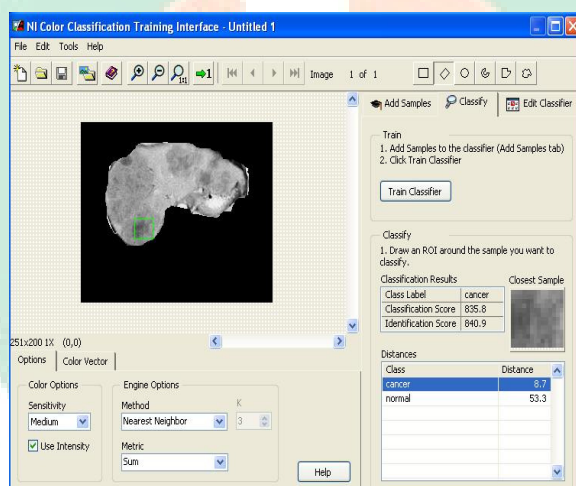


FIG 5.Edge detection(Best Edge)



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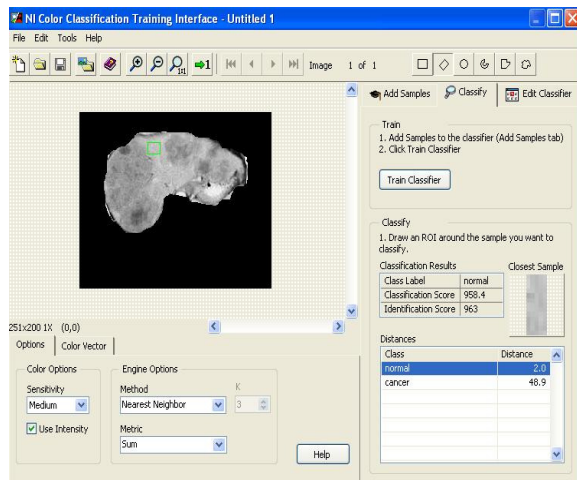


FIG 8.Classifier(normal)

object	classification	identification	score
1	cancer	736	757
2	cancer	709	773
3	normal	784	840

Table 1.classifier output

The above table explain the result of classifier. To classify the liver image whether it is affected by cancer or not first we have to train a classifier like to give the sample values for normal tissues as well as cancer tissue. The sample values can be taken from many patient details. Then the classifier can detect the given image is affected by cancer or not. It is very easy compared with biopsy.

V. CONCLUSION

The classified image has been implemented in Unified Technology Learning Platform (UTLP) kit. This technique will help to improve the appearance of classified Image and detect the presence of abnormalities during diagnosis. In this paper the image was classified by using the classification process instead of using the segmentation process .Because it is very simple to detect the image. Initially the classifier wants to be train then only the image can be classified. In this the color sensitivity needs to be medium. Whereas the metric should be in sum as well as the method considered for an image have to be nearest neighbor.

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