Diagnosis of immedicable diseases using Scanned Images

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Abstract-In these dynamic world, the interest in digital biomedical image processing methods play a wide role .This paper presents a survey on methods that use digital image processing techniques to detect and classify the human disease like cancer , ulcer , diabetics etc . These are scanned through machines and the scanned reports are used to analysis the health status. But here theses scanned images are directly converted into text and audio using LCD and voice board.

1.INTRODUCTION

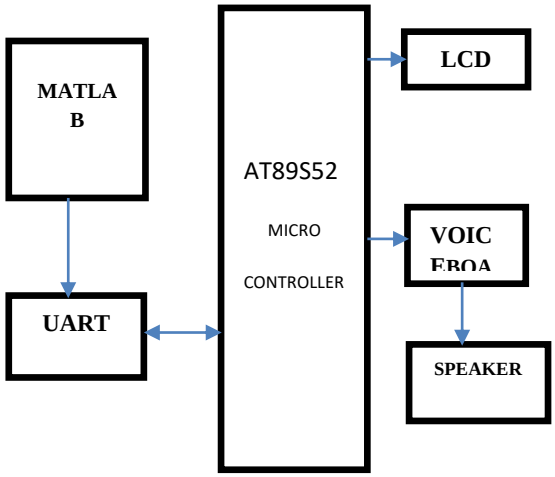
Immedicable disease is a health disease that persists over a long period of time. Common immedicable diseases are asthma, cancer, diabetes and some viral diseases .This paper mainly focus only on types of cancer. Cancer is not a single disease rather it is a general term used to describe various malignant tumors that affect all forms of higher organisms including plants and animals more than hundred (100) types and sub types of cancer are known to effect the human beings[5]. Caner can be defined as an abnormal growth of cells in any tissues or organs of the body. Lung and bronchial cancer is the most serious cancer in the world. 54% of cancer are detected in women and 24% of cancer are detected in men are associated with over weight and obesity .

In 2017 , about 1,688,780 new cancer cases diagnosed an 600,920 cancer deaths in the US. Nearly 13% of all cancers diagnosed in adult ages 20 and older will be

rare cancers. Caners are not able to detect in the early stages . Because the humans are unable to predict symptoms which are occurred in the human body (appeared like a wound). The symptoms such as lump, abnormal bleeding , prolonged cough , unexpected weight loss, change in bowel movements. Let as discuss some types of cancers as given below. The eye cancer is nothing but ,the cell of cancer which affect the area of eye which leads to tumors by the means of continuous radiation radiated from many external devices such as mobile, laptop, Television, LED display which has high radiated power. Bladder cancer is a cancer in which is cell grow abnormally and have the potential to spread to other parts of the body. Breast cancer is a cancer that develop from breast tissue[4]. Sign of breast cancer may include limp in the breast, a change in breast nipple etc. kidney cancer is a cancer that starts in the kidney. The two most common types of kidney cancer are renal cell carcinoma (RCC) and transitional cell carcinoma (TCC).

2.CONVERSION PROCESS

In proposed work, the scanning digital image for the human diseases are processing directly using digital image processing and
the disease analytical report is directly display by board using LCD and corresponding audio is play using voice board. The disease attack area find using k-means segmentation algorithm. The system reduce the processing time and highly accurate.



Fig(1) **Conversion process of scanning image**

a)Image Accession

The accession process starts with by select the scanned images from the database . The images are stockpile in MATLAB. Instead of situate scanned images , its better to use the CT images having low noise. Hence the user can analysis the various affecting stages.

b)Image pre-processing

To reduce the noise and improve the intensification, all the images could be sustain by pre-processing[6]. The pre-processing was done by the pre-processor. The inclusion of the header file was founded by the pre-processor.

c)Noise Removal

The input image is RGB image. The RBG image has large number of noises and it is not supported in MATLAB. Thus the RGB images are converted into grey scale images. Even grey scale images have white noise, pepper noise and salt noise …etc,. To reduce this noise, filters are used. In image processing, low pass filters are used because it suppress the high frequency in order to get the images as smooth as possible. To obtain accurate performance Image de-noising algorithms are used.

d)Image Enhancement

Image intensification is the process of adjusting and screening the digital images . So that the result are easy to obtained. Image intensification technique can be divided into two categories.

1. Spatial domain methods
2. Frequency domain methods

The Spatial domain method used to operate directly on pixels and the Frequency domain method used to operate on the fourier transform. Basic concept of image intensification is to obtaining the contrast of digital images. While the images scanned from human body does not have clear view and the images have large amount of noise. In image intensification, gabor filter enhancement technique is used to reduce the noise signal[1]. Hence the exact view of the scanned images can be rectified by increasing or decreasing the contrast. The major operation of the image intensification is improving the visual appearance of the image. The process enhancement not nonly enhance the medical images, it enhances images like satellite images, aerial images and even real life photographs which has taken from mobile phones and digital cameras .

e)Processing

Theprocess of the system is to convert analytical report of scanned images into text and voice by using LCD display board and speaker as well as voice board. For this conversion digital image processing is involved[8]. The digital image processing has various stages such as image accession, image pre-processing, image intensification and image segmentation.

f)Image Segmentation

In computer vision, segmentation refers to the process of partitioning a digital image into multiple segments (sets of pixels, also known as super pixels).Image segmentation is typically used to locate object and boundaries. Boundaries are included in lines and curves,etc..in images. Every pixel having lable in the process of image segmentation[2], such that fixed with same lable share certain visual characteristic in images. The result of image segmentation is a certain portion that collectively cover the entire image or set of contour extracted from the image. Some characteristics are similar to each of the pixel in a region and it include color ,intensity ,texture.

All image processing operation was mainly focused on better recognition of interest of an object and boundaries. The local features of one object can be founded by compared from other object as well as objet background of an image[7]. The next step is to check the each pixel individually of knowing the interest of an object. This process provide a binary image. The pixel value are consider as to such as one and zero. A pixel has one means object otherwise it is zero. After segmentation process is completed, it is known that which pixel belongs to which object.

g)Post-Processing

Post processing segmentation is done using following methods.

f)Features Extraction

Feature extraction is an algorithm and technique which is mainly used to diagnose and segregate the various desired fragmentation of an images. After fragmentation it is necessary to find the lung region with help of diagnosis rule .This rule detect the cancer nodules in the lungs and eliminate the false detection of cancer nodules. when the detector result was store in segmentation and provide better result for the diagnosis rule. In features extraction literature we found two approaches, to predict the lung cancer .The first approach is binarization and second approach is masking the feature extraction is very important working process of digital image processing.

3.HARDWARE REQUIREMENT

a)AT89S52 MICROCONTROLLER

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel’s high-density nonvolatile memory technology and is compatible with the Indus-try-standard 80C51 instruction set and pin out. The AT89S52 consist of 40 pins. Each pin has its own function. The controller(AT89S52) plays an important role in the conversion process. Without the function of the microcontroller the process won’t be fulfilled so the microcontroller perform the vital role in the conversion process.

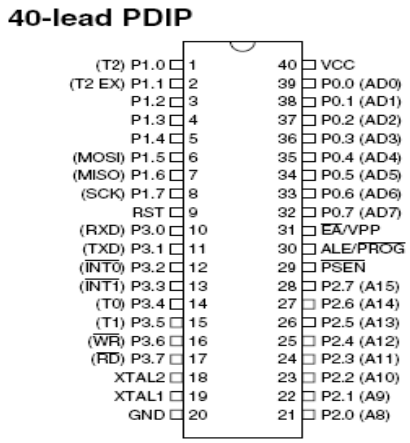
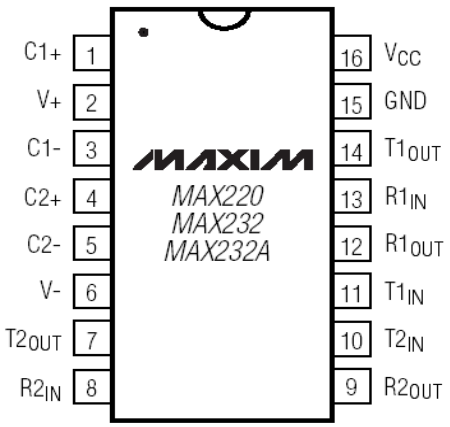


Fig (2) Pin Diagram

b)UART

A universal asynchronous receiver/transmitter is a type of "asynchronous receiver/transmitter", a piece of computer hardware that translates data between parallel and serial forms. UARTs are commonly used in conjunction with other communication standards such as EIA RS-232.A UART is usually an individual (or part of an) integrated circuit used for serial communications over a computer or peripheral device serial port. UARTs are now commonly included in microcontrollers. A dual UART or DUART combines two UARTs into a single chip[3]. Many modern ICs now come with a UART that can also communicate synchronously; these device are called USARTS .For a proper serial communication the UART is actually used . Because the data format and the transmission speed are configurable . UART is the computer hardware system which is introduced by exar cooperation.



Fig(3) voice Board

c)VOICE BOARD

The APR9600 experimental board is an assembled PCB board consisting of an APR9600 IC, an electri microphone, support components and necessary switches to allow users to explore all functions of the APR9600 chip. The oscillation resistor is chosen so that the total recording period is 60 seconds with a sampling rate of 4.2 kHz.

d)LCD

Please take care not to exceed 5V, as this will cause damage to the device. The 5V is best generated from the E-blocks Multi programmer or a 5V fixed regulated power supply. The 16 x 2 intelligent alphanumeric dot matrix displays is capable of displaying 224 different characters and symbols. A full list of the characters and symbols is printed on pages 7/8 (note these symbols can vary between brand of LCD used). This booklet provides all the technical specifications for connecting the unit, which requires a single power supply (+5V).

4.CONCLUSION

Lung cancer is the most dangerous and widespread in the world according to stage the discovery of the cancer cells in the lungs, this gives us the indication that the process of detection this disease plays a very important and essential role to avoid serious stages and to reduce its percentage distribution in the world.

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