Health Monitoring System Using IOT

Prof.K.V. Deshpande, Aishwarya Ghodekar ,Kalyani Mahajan ,Tabasum Kamate, Kirti Kore

Assistant Professor, Department of Computer Engineering, JSPM's RSCOE,,

UG Student, Department of Computer Engineering, JSPM's RSCOE, Pune

Pune

Kirtivdeshpande@gmail.com, aish.ghodekar@gmail.com, nvaibhavmahajan00@gmail.com, tabassumjk97@gmail.com, kirtikore11@gmail.com

Abstract

Now-a-days, image processing methods are mostly used in many medical fields to improve early detection and prevention stages, where time is a very important factor in the patient's detection of the disease as quickly as possible, especially in various type of cancer such as breast cancer. Due to its high prevalence combined with the complicated diagnosis, breast cancer has attracted the attention of scientific institutions in recent years. Statistics from 2008 indicate that breast cancer is the one that attacks the largest number of women and causes death among them, all over the world. For successful treatment, early detection of cancer is very important. There are few methods for identifying cancer cells. A lot of research has been done on breast cancer diagnosis using different techniques of image processing and classification Prevention becomes impossible because the cause of breast cancer remains unclear. Thus, solution to prevent breast cancer is early detection of tumor in the breast. Masses and micro-calcification are early symptoms of suspected breast cancer. With help of this,at itsinitialphase we will be able to predict breast cancer.
Keywords: Cancer Identification, Enhancement, Segmentation, Feature extraction

1. Introduction

Cancer is the major reason of death in both developed and developing countries. Benign tumors and malignant tumors have been identified as two types of breast tumors. Compared to malignant tumors, benign tumors are less harmful as malignant tumors are rapidly growing and harmful, while benign tumors grow slowly and are less harmful. The most common reason for mortality of women is breast cancer. Prevention becomes difficult in the initial stage of the cancerbecause the symptoms or reasons remain nearly unknown. Approximately 562,340 Americans died of cancer in 2009, more than 1,500 a day. About 1,479,350 cases of cancer were reported in 2009. Breast cancer is also the most common cause of lung cancer deaths. Medical imaging technique is used to create visual representation of the human body's interior for medical purposes and this technology can be used to diagnose non-invasive possibilities. MRI, CT scan, ultrasound, SPECT, PET and X-ray are the different types of medical imaging technologies. There are no alternative or effective way to prevent breast cancer from happening so earlier detection of breast cancer is therefore the basic important step for the diagnosis and prevention or treatment of breast cancer. X-ray mammography is one of the important and usually used mechanism used in clinical researches or usage for medical diagnosis and screening. Although mammography screening has certain disadvantages, like poor efficacy onthe dense breastsof young women or women who underwent surgical operation.Mammographyis most fruitful method for earlier detection of breast cancer, because it has bigreactivity to overweight breasts andvery good execution/performance in micro-calcification detection. As anoutput, a limitedcount of radiologists required to examine the large numbers of mammograms, leading to misdiagnose due to visual fatigue due to human errors. In the screening process, Computer-Aided Diagnosis(CAD) is used to refine the correctness and efficiency of the mammogram examination.CAD technologies are commonly used to facilitate medical image processing also its two methods are as below: computer-

assisted identification (CADe) and computer-assisted diagnosis(CADx). Purpose of CADeis,to identify the position of suspected areawhere aspurpose of CADx is characterization(maligant versus benign). At present, several image processing methods have been proposed to detect tumors in mammograms. Different technologies have been used, like fractal analysis, discrete wavelet transformation, Markov random field. Masses and micro-calcifications on mammograms that can be used to enhance strategies for earlier detection of cancer. As a result, most of the procedures described above concentrated on two forms of breast cancer: micro-calcifications and masses.

2. Related Work

1. Paper Name: Breast Cancer Early Diagnosis Detection Using Infrared Images.

    Author: Pragati Kapoor, Dr. S.V.A.V. Prasad
    Publication Year: 2010

Description: Infrared thermal imaging or thermography is animportant screening tool and it can alert people 10 years in advance of breast cancer. Nevertheless, it may be difficult to view the thermogram. In order to be unsuitable for the early screening of breast cancererious cell using thermogram, image segmentation is known as automated method for the study ofthe thermal infrared images. Edge detection and Hough transform are used for asymmetry analysis of heat patterns in the contralateral breasts. This paper suggeststhe way to diagnose breast cancer based on infrared images. First, with the application of edge detection and Hough transformation methods, the breast image can be seprated accurately and automatically. On the basis of this, asymmetries breasts will be identified based on pattern recognition and distribution of pixels. The technique will be successful and realistic and will be of great practical use in the treatment of asymmetric breast defects using infrared images and as a helpful another opinion will benefit.

2. Paper Name: Identification of breast cancer using the author's name of the image processing technique.

    Author : Prannoy Giri, K. Saravanakumar
    Publication Year: 2017

Description: This paper on the computer-aided detection and diagnostic algorithm was developed to help radiologist to make an correct diagnosis and reducts the number of false positives. The techniques include pre-processing,segmentation,feature extraction and selection,classification techniques and features of mammogram. Main purpose of it to cure cancer usingcustomization of medication,depending on type of cancer so it can be solved if foundat earlier stage.

3. Paper Name : Prediction of breast cancer using Algorithms for Image Enhancement and Segmentation.
Author : Yousif M.Y.Abdallah Publishing Year: 2018

    Description: This paper uses segmentation methods to suggest breast tissue. Texture analysis code had been developed for malignant tissue in particular. Used for mammography breast diagnosis. Future work focuses on studying the identification of all abnormalities in the breast using other imaging techniques

3. Methodology

List of steps to carry out as follows:
1] Image Pre-Processing:
Pre-Processing image is used to extract important image processing features and remove the noise elements/factors when present in the image. Image filteringstep is alsoused in the pre-processing of images. Averaging filters, median filtering, and morphological filtering are various filtering techniques.

2] Image Segmentation:

Segmentation of images is the process of dividing an image into many segments. The method of image segmentation involves operations such as thresholding and identification of edges.

2.1] Thresholding:

A video is divided into a foreground and background in image thresholding. Converting pictures into binary images is mainly done. Thresholding may be regional or local thresholding. The similar threshold values is used in global thresholding for all regions, whereas different threshold values are used in an image for different regions. Histogram thresholding, Otsu thresholding, Fast marching method are various thresholding techniques.

2.2] Edge Detection :

Edge detection is one ofthe method of image processing to identify boundary within the images. This operates by sensing light discontinuity. Edge recognition in different fields like image processing, computer vision, and machine vision is used for image segmentation. Popular algorithms for Edge Detection includes Sobel, Canny, Prewitt, Roberts and Fuzzy logic methods.

2.3] Feature Extraction :

Throughout image processing, object extraction methods are used to remove essential image attributes such as parts, image forms. In this point, normality and anomaly of an image can be confirmed. The observed characteristics provide a basis for the classification process. Different image characteristics may be field, periphery, excentricity, size, etc. The histogram of oriented gradients, local binary patterns, Gray-Level co-occurrence matrix are various feature extraction techniques that can be used. The characteristics considered in the project to be considered as below :-

1) Perimeter: It is an scalar value which gives the nodule pixel's original number of outline. It is acquired by summing up the recorded pixel's intertwined outline in the binary image.

2) Area: It is also an scalar value that gives the original total pixel count of the nodule. It is acquired by summing pixel area in the image recorded as 1 in the obtained binary image.

3) Eccentricity: It helps us to recognize the object's roundness. This index of matrix or roundness or circularity or irregularity(I)is only circular (I).
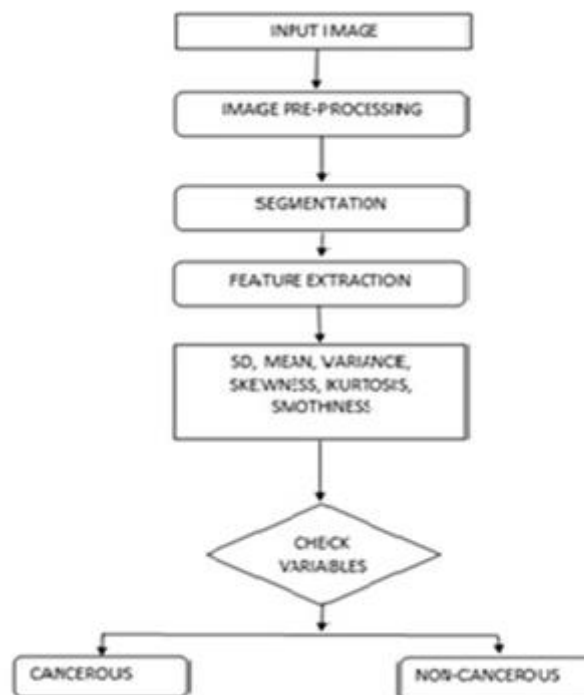

Figure 1.Working flow of Model

3.1 Advantages:
1. Quite easy.
2. More cost-effective.
3. Small faults can be reversed.

3.2 Applications:
1. Used for brain tumor diagnosis.
2. Used for major disease treatment.

3. Late breast cancer detection.

4. Result and Discussion
Essential features are identified in the pre-processing step, and noise is eliminated from the file. The image is divided into many sub-parts for image detection of thresholds and edges. The cancer is identified from the affected or unaffected area of the photograph. The white cancer cell represents the infected area and the unaffected region displays normal results.

5. Conclusion
Early cancer detection is generally good for health. In this project work, we have developed an breast cancer detection system based on image processing. The main purpose of this project is to provide consumers with the early alert, as well as expense and time-saving gains for the user. Edges in image processing help us identify artifacts. By using the input pictures, we have successfully identified the cancer cell in the breast. The system we haveproposed, detects and identifies the cancerios part from the breasts automatically and will also help to determine the area affected by the cancer cells , that is whether the input image is cancer affected or not

References

[1] Nisar Ahmed Memon, Anwar Majid Mirza, and S.A.M. Gilani, "Segmentation of Lungs from CT Scan Images for Early Diagnosis of Lung Cancer", World Academy of Science, 2006.

[2] M.Gomathi, Dr.P.Thangaraj, "A Computer Aided Diagnosis System For Detection Of Lung Cancer Nodules Using Extreme Learning Machine", International Journal of Engineering Science and Technology , 2010.

[3] Binsheng Zhao, Gordon Gamsu, Michelle S. Ginsberg, Li Jiang,Lawrence H. Schwartz, "Automatic detection of small lung nodules on CT utilizing a local density maximum algorithm", Journal of Applied Clinical Medical Physics, 2003.

[4] Disha Sharma, Gagandeep Jindal, "Computer Aided Diagnosis System for Detection of Lung Cancer in CT Scan Images", International Journal of Computer and Electrical Engineering, 2011.

[6] Zhi-Hua Zhou, Yuan Jiang, Yu-Bin Yang, Shi-Fu Chen, "Lung Cancer Cell Identification Based on Artificial Neural Network Ensembles", Artificial Ingelligence in Medicine, 2002.

[7] Samir Kumar Bandyopadhyay, "Edge Detection from CT Images of Lung", International Journal Of Engineering Science & Advanced Technology ,2012.

[8] H.P. Chan, N. Petrick, B. Sahiner, "Computer-aided breast cancer diagnosis",Artificial Techniques in Breast Cancer DiagnosisandPrognosis,2000