Cancer Diagonsis with the help Digital Image Processing using ZIGBEE Technology

S.Kannadhasan, N.Basheer Ahamed, M.RajeshBaba

***Abstract*-----Cancer is the second largest deadliest disease with increasing rate of mortality so any small step to eradicate this disease may equivalent to serving something great to the society. Thus in our project, it not only effectively detect the presence of cancer cells but also it reducing the overall time taken for diagnosis by carrying the whole process under biotelemetry. On the other hand, now biotelemetry is mostly used for one dimensional signals thus in our project it extend for transferring two dimensional signals i.e., image if it happen so then complex or time consuming diagnosis process completes in short duration. The telemetry link was provided by Zigbee transceivers and diagnosis was carried with the help of digital image processing technique.**

Keywords: Mammography, Detection and Diagnosis, Breast Cancer

I. INTRODUCTION

Digital Image Processing has created the human race technologies are living from the environment with a shorter period of times. Now a day the human race spoils increasing cancer disease at higher rate period in every year. All human parts are lying on your front to this disease. Brain, lungs and breast is a serious matter increasing the people in the recent past. The first part is on individual hand but when on considering second we can do something. Thus an effective tool is needed to transfer this file immediately as soon as they capture for diagnosis. On the other hand telemetry provides platform to measure the parameters in distant. Now days, bio telemetry is widely used for measuring and monitoring the single dimension parameters such as EEG, ECG, temperature and pressure etc. It also used to study some other species anatomy. Thus complex medical diagnosis of breast cancer process carried in a less time using 2D-bio-telemetry.

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II. PROPOSED WORK

Successful treatment of breast cancer depends on early detection and diagnosis of breast abnormalities and lesions. Mammography is the best available examination for the detection of early signs of breast cancer such as masses, calcifications, bilateral asymmetry and architectural distortion. Because of the limitations of human observers, computers have major role in detecting early signs of cancer. Wide range of features that define abnormalities and the fact that they are often indistinguishable from the surrounding tissue makes the computer-aided detection and diagnosis of breast abnormalities a challenge. This chapter discusses breast lesions and their features also this chapter briefly presents some of the developed computer-aided detection and diagnosis methods for each lesion.

The ACR (American College of Radiology) Breast Imaging Reporting and Data System (BI-RADS®) suggest a standardized method for breast imaging reporting. The breast is almost entirely fat when there is less than 25% fibro glandular tissue. Scattered fibro glandular dense breast tissue has between 25% And 50% fibro glandular tissue and heterogeneously dense breast tissue has between 51% and 75% fibro glandular tissue. When the breast is consisting of more than 75% fibro glandular tissue the breast is extremely dense. In the latter case sensitivity of mammography exam is decreased and the diagnosis of malignant lesions is more difficult. Many lesions (masses, calcifications, architectural distortion and bilateral asymmetry) are defined with wide range of features. The features determine lesions shape, size, distribution, margins etc. Some of the lesions can be easily overlooked because of the poor feature visibility. One of the problems that appear in diagnosis of malignant lesions is incorrect classification of Lesions. Final assessment and classification of mammograms is made using ACR BI-RADS categories **(Figure 2).** If the finding can not be assessed, an additional imaging evaluation and/or prior mammograms are needed for comparison (BI-RADS 0).

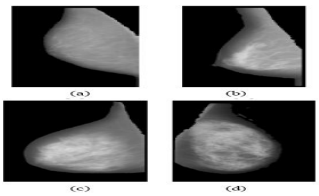

Figure 1: Examples of mammograms, each of different Categories of breast tissue: (a) fat breast tissue, (b) scattered fibro glandular dense breast tissue, (c) heterogeneously dense breast tissue and (d) extremely dense breast tissue**.**

III. DETECTION AND DIAGNOSIS

Objective and quantitative analysis facilitated by the application of computers to biomedical image analysis leads to a more accurate diagnostic decision by the physician. Computer-aided detection (CADe) is designed to provide the radiologist with visual prompts on Series of mammograms. Findings in a number of studies have demonstrated that CADe has the ability to detect and prompt mammographic signs of cancer with the potential to increase cancer detection rates by approximately 20% In most developed CADe and CADx programs, there are some common steps that have to be fulfilled in order to find the suspect lesions. Most detection algorithms consist of two stages. In stage 1, the aim is to detect suspicious lesions at a high sensitivity. In stage 2, the aim is to reduce the number of false positives without decreasing the sensitivity drastically. In some approaches some of the steps may involve very simple methods or be skipped entirely. Most diagnosis algorithms (CADx) begin with a region of interest (ROI) containing the abnormality. The output of a CADx system may be the likelihood of malignancy or a management recommendation (Figure 2). Different research groups have worked on different components of the problem and human interaction may occur at various stages. For example, many CADx algorithms start with manually segmented ROIs.

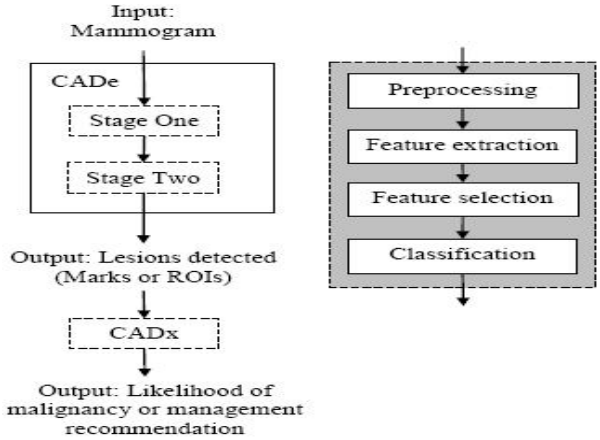

Figure 2. CAD based diagnosis

In the preprocessing step the breast is segmented in order to limit the search for abnormalities without undue influence from the background of the mammogram and some filtering or normalization is accomplished in order to improve the quality of the image and reduce the noise. The next step, feature extraction is one of the most important factors that affect the CAD performance. Basically, researchers Have investigated two types of features: those traditionally used by radiologists (gradient-based, intensity-based and geometric features) and high order features that may not be as intuitive to radiologists (e.g. texture features). Critical issue in CAD design is the choice of the best set of features for detecting or classifying the suspect lesions. The whole set of features may include redundant or irrelevant information. One feature taken alone might not be significant for classification but might be very significant if combined with other features. In order to decide which features are best suited for classification, feature selection is used. Feature selection is defined as selecting a smaller feature Subset of size *m* from a set of *d* features that leads to the largest value of some classifier performance function. Finally, a classification (false-positive reduction) step is preformed, where on the basis of the mentioned features false signals are separated from the suspect lesions by means of a classifier. In the other words, the candidate lesions are first located and then further analyzed in a feature analysis and classification phase to determine the final classification of each candidate.

IV. RESULTS AND DISCUSSION

The Results are done by using MATLAB Software. **Figure 3:** shows that Mammography Image Enhancement and detection of Breast Cancer Cell. **Figure 4:** shows that each stage of Cancer Diagnosis Image

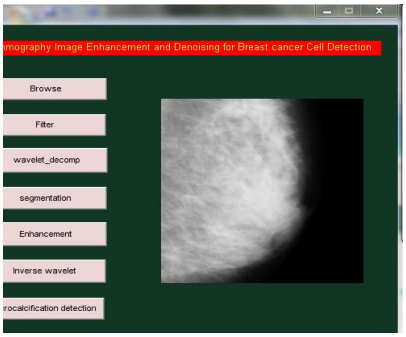

Figure 3: Mammography Image Enhancement and detection of Breast Cancer Cell

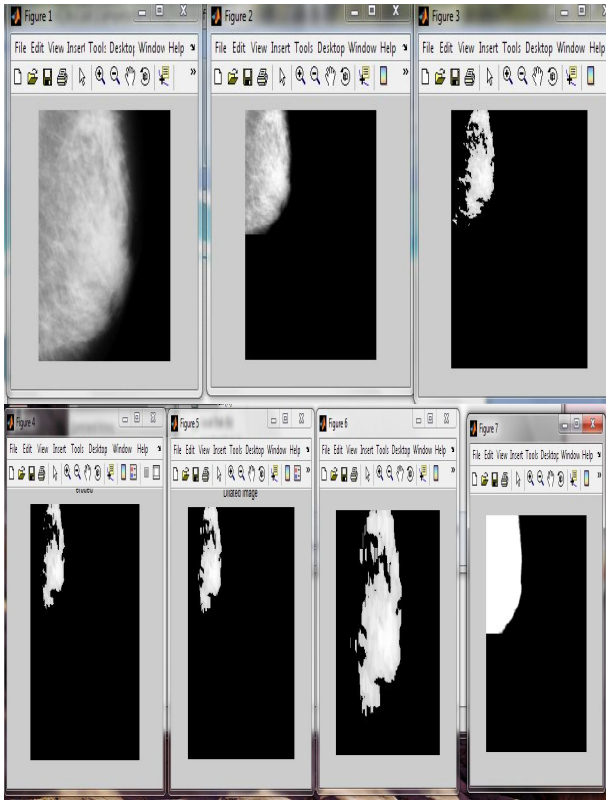

Figure 4: Cancer Diagnosis Image

V. CONCLUSION

Thus to participate in the medical world using the electronics we did an effective project for wireless transmission of medical image by 2D telemetry and to focus on the cancer disease. We processed the tumor identification by MATLAB programming which helps the doctor for diagnosis of this disease. By our project we think we are serving to society.

VI. REFERENCES

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