C…… M…… C…… by I…… P…… T……and F……: Review

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***Abstract- Breast cancer is the most common invasive (suffering) cancer in women, this cancer second leading cause of death for women in breast cancer. After lung cancer breast cancer is second main cause of death of women in all over world and more than 8% women has been invasive from breast cancer during their lifetime. Breast cancer is start in women when cell begin to grow out of control in the breast , these out of control cells produce a major disease form a cancer, malignant growth or tumor. To overcome the death rate ratio by the causing of breast cancer, need some early key to detect and diagnosis the cancer, the key reduce the death rate and save lives. In this paper try to reviewed different types of techniques of image processing and fuzzy expert system to diagnosis the breast cancer. Such techniques are ultrasound image, multistate adaptive, microwave image, free form deformation, MIST, hemispherical antenna array These tools and techniques is used to early detection of cancer disease. Also classify the type of cancer.***

***Keywords—breast cancer; image processing, MIST, microwave image, hemispherical antenna array experiment, fuzzy expert system***

1. INTRODUCTION

Daily Billions of cells are made in human body. Normally it develop in human body in such a systematic way of new cells only made at there, where cells are need but in cancer this act prove invaild result. Mamilla cancer starts when cells in the Mamilla begin to grow out of control. These out of growing cells usually convert in to tumor which can be seen with the help of X-ray.it is seems felt like a crumb. When the cells are scattered in the whole body or our parts of the body.

Breast cancer is the second leading cause of death for women all over the world and more than 8% women will bear from disease during their lifetime. The earlier cancers were identifying, the better medication can be provided. However, early detection requires an definite and reliable diagnosis which should also able to distinguish benign and tumors [5].

X -RAY mammography remains the preferred method for recognize no credible early stage mamilla cancer. MIST micro wave imaging via space time beamforming. This technique is use to detect the early stage of mamila cancer. Although it provides high-quality images at low radiation doses in the majority of patients, its inherent limitations are well recognize d. Most ramification, approximately 15% of all breast cancers present at the time of screening are missed by conventional

.mammography while nearly three-fourths of all breast lesions that are determine by mammography and biopsied turn out to be benign [2]

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An excellent review of this topic can be found in. As presented there, currently there are two main streams in microwave breast imaging:1.Microwave tomography, 2.Radar based image Both approaches rely on a difference in the electrical properties of normal and malignant breast tissues. In microwave tomography the aim is to repair the electrical profile of the breast, by solving on linear and ill posed inverse smattering problem [4].

Breast cancer persists to be the top risk to women’s health.

In the U.S. alone, in 2006 the number of new cases of breast cancer in women was estimated to be 212 920.1 As explained in early diagnosis is the key to defeat the breast cancer. The appearing breast cancer imaging technologies, microwave imaging is one of the most promising, adorable methods. It is no ionizing comfortable, sensitive to tumors, and specific to malignancies. The physical basis for microwave imaging lies in the compelling contrast in the dielectric properties between normal breast tissue and the malignant tissue at microwave frequencies [3]

CARCINOMA of the breast is the most common malignant disease in women in the western world. 9.5% of women will develop the disease in the United Kingdom. The major goals of breast cancer diagnosis are early detection of malignancy (hatred) and its differentiation from other mamilla disease. Currently, the detection and diagnosis of breast cancer primarily relies on X ray mammography. For further differenti ation of mammographic or clinical abnormalities, ultra-sonography, transcutaneous biopsy, and MRI are used [1]

Although X-ray mammography has the advantage of high sensitivity, almost approaching 100%, in fatty breast tissue, high resolution up to 50 m, and low cost, it has a number of lack and harm, such as low sensitivity in dense blandly breast tissue, low specificity, and poor signal-to-noise ratio [1] .

For the diagnosis of breast cancer, the fuzzy expert system is one of the benefit applications with the capability to handle ambiguous and imprecise in expectation and diagnosis of breast cancer. Due to their robust behavior in the effect of noise and uncertainty, [obscurity](http://www.thesaurus.com/browse/obscurity) yields better end. mamilla cancer tumors are classified as: Malignant Breast Tumor and Benign Breast Tumor. Authors achieve that by using Fuzzy-c-means technique, with higher efficiency and accuracy would be capable of classify cancer cases whether cancerous or benign tumor cases. , a fuzzy expert system allows a simple way for designing an accurate solution with assistance from an uncertain region [6]

During verdict by fuzzy expert system divide the cancer in two four categories:-stage 1,stage 2,stage3,stage 4 and find the rates of diseases in body part of human at pirior stage for finding the more appropriate solution of that problem.

1. LITRATURE REVIEW

**D.RUECKERT et al [1999]** aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.[1]

ESSEXJ.BOND et al [2003] propose aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa.[2]

BIN GUO et al [2006] aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa [3]

MACIEJ KLEMM et al [2009] aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

[6]

Table no. 1 Different Technique With Result

| SR. NO. | NAME OF AUTHOR | **METHOD OR TECHNOLOGY** | CONCLUDE |
| --- | --- | --- | --- |
| 1 | D.Rueckert. et al( 1999) | Nonrigid registration of contrast-enhanced breast MRI by a free-form deformation (FFD) based on B-splines | TR=12 ms, TE =5ms, flip angle= 35 degree, FOV=350mm ,aquried= 1.5-T Siemens Vision MR system with Gd-DTPA |
| 2 | Essex J. et al.  ( 2003) | Medical Radar, ultra-wideband (UWB) with beamforming algorithm | removal the thickness of skin successful detection of 4 and 6 mm diameter spherical tumors |
| 3 | BIN GUO et al (2006) | Multistatic adaptive microwave imaging (MAMI). | The sensitivity, specificity, and accuracy of the proposed method are 95.6%, 90.63%, and 94.26% respectively. |
| 4 | Macieh.K.et.  Al 2009 | DAS and MAMI               beamforming. algorithm and Numerical simulations | Using a physical 3D curved breast phantom, the ability to detect small (4 mm and 6 mm) tumors. |
| 5 | H.D Cheng. et al.2010 | CAD systems and classification include the four stage (preprocessing, segmentation, feature extraction and selection) using ultrasound images techniques. | Exhibits higher resolution, lower side lobes and better noise and interference rejection capability |
| 6 | Ohri K. et al..  2016 | Classification of masses using gray weighted function | If mean<=0.49,Standard Deviation=>0.45,Variance<=0.25,Entropy =>0.96,then then its malignant tumor If mean >0.52, standard deviation<=0.49, Variance=>0.12,Entropy<=0.97,then its benign tumor. |

III.CONCLUSION & FUTURE DIRECTION

Breast cancer start in women when cell grow out of control in whole body parts. In this paper we discuss the different kind of techniques used by image processing and fuzzy expert system to detect and diagnosis and classify the breast cancer earlier. If we detect the cancer at the early stage than we can solve the solution early and save the number of women by this.Such techniques ultrasound  image, multistatic adaptive microwave image ,free deformation,  MIST, hemispherical antenna array. By this compare the abnormal mammilla with normal mammilla compare them by frequencies and with waves by can be detected the early that which kind of breast cancer suffer in women. By this key reduce the date rate and save the number of lives. In future work we will do this diagnosis in hybrid neural network because in this review paper we can say that all the work is done on waves with the help of images but if we want to do further work than we can continue with hybrid neural network in artificial neural network.

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