

SURVEY ON BREAST CANCER DETECTION USING NEURAL NETWORKS

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Abstract - Breast cancer is the leading cause for the death of womens now a days ,it has no age limits any aged person will be affected by breast cancer. If breast cancer is detected in early stage, then chances of survival are very high. In body new cells take place of old cells by orderly growth as old cells die out. Maliganant and Benign level plays a major role in diagnosing the breast cancer.If the maliganant is high there is a high cause of death,or else in benign there is a chance to recover and reassurance that you don't have cancer.Many existing works are available,but they don't focus on the accuracy level of the results. By using the artificial neural network algorithm ,the accuracy level of the result is increased

Key Words: Breast Cancer ,Neural Network ,Detection of breast cancer.

1.INTRODUCTION

Breast cancer is very common and is considered as the second dangerous disease all over the world due to its death rate. Affected can survive if the disease is diagnosed before the appearance of major physical changes in the body. Medical experts examine mammograms and recommend biopsy if abnormalities are found in the mammogram. Radiologist recommendation is very important at this stage, in case of wrong diagnosis; patient has to go through unnecessary biopsy. But it takes more time to diagnosis the cancer by manually, so there is a need of machine learning at the high accuracy level. Breast cancer is common to both male and female, but it affects mostly to the female. Now a days 90% of womens are more affected and in that 50 % are died. 2000 mens will be affected and in that 400 died..

2. BACKGROUND

In this section, we introduce Algorithm technique and their common model. the paper.

2.1 ARTIFICIAL NEURAL NETWORK

ANNs are composed of multiple nodes, which imitate biological neurons of human brain. The neurons are connected by links and they interact with each other. The nodes can take input data and perform simple operations on the data. The result of these operations is passed to other neurons. The output at each node is called its activation or node value. Each link is associated with weight. ANNs are capable of learning, which takes place by altering weight values.

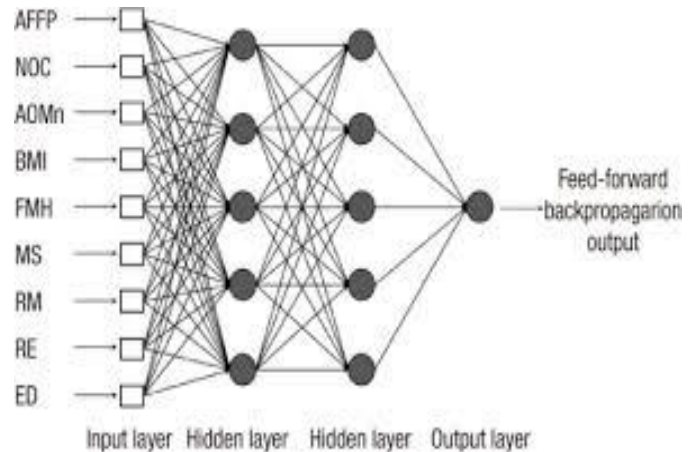


Fig.1 ANN

2.2 Feed Forward Neural Network

A feed forward neural network is an artificial neural network wherein connections between the nodes do not form a cycle. The feedforward neural network was the first and simplest type of artificial neural network devised. In this network, the information moves in only one direction, forward, from the input nodes, through the hidden nodes (if any) and to the output nodes. There are no cycles or loops in the network.

$$f'(x) = f(x) \{1 - f(x)\}$$

This has two types like single layer perceptron, and multi layer perceptron.

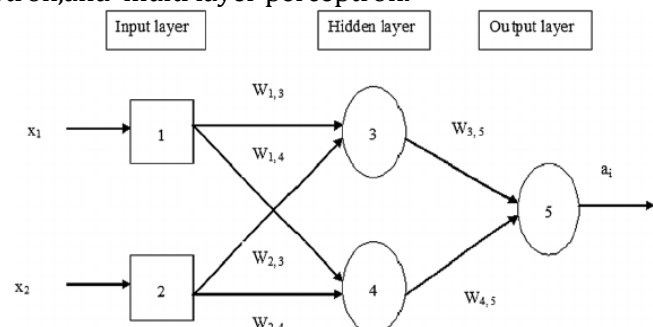


Fig. 2. Feed Forward Neural Network

3.LITERATURE SURVEY:

There are many approaches in have been used to diagnosis breast cancer using data mining techniques. Some of this are presented here.

K. Rajendra Prasad, C. Raghavendra, K Sai Saranya, has examined application on classification of breast cancer

detection using feature extraction technique. In this approach, using extracted feature for cancer dataset and gives results on Support Vector Machine Algorithm.

Suganthi Jeyasingha, Malathy Veluchamy, developed a application of Logistic Regression Based Random Forest Classifier for breast cancer diagnosis technique. They presents an approach for random forest technique to train the datasets and predict the results.

Manish Shukla and Sonali Agarwal examined application of classification technique and Data clustering a machine learning approach. They presents an approach for centroid selection in k-mean algorithm for health datasets which gives better clustering results in comparison to traditional k-mean algorithm

Desta Mulatu, Rupali R. Gangarde, used a Data Mining Techniques for Prediction of Breast Cancer Recurrence Approach. In this they have used classification, association rules, method and formed the result.

Elouedi, Hind, et al. proposed a hybrid diagnosis approach of breast cancer based on decision trees and clustering. First they have done Extraction of the malignant instances and apply K-means algorithm to split the malignant instances. After that they apply decision tree algorithm (C4.5) to every cluster and compare the different accuracies calculated in each case. Combined results of benign and malignant are applied to the C4.5 algorithm to find out the results based on the confusion matrix and the global and detailed accuracy values.

Lavanya D., and K. Usha Rani studied a hybrid approach: CART decision tree classifier with feature selection and boosting ensemble method has been considered to evaluate the performance of classifier. They applied CART algorithm, CART with Feature Selection Method and CART with Feature selection and Boosting on different Breast cancer data sets and compared the Accuracy.

Shah, Chintan, and Anjali G. Jivani conducted the comparison between three algorithms namely Compares Decision tree, Bayesian Network and KNearestNeighbor with help of WEKA (The Waikato Environment for Knowledge Analysis), which is an open source software. The author concluded that NaïveBayes is a superior algorithm compared to the two others because it takes lowest time i.e. 0.02 seconds and at the same time is providing highest accuracy.

Sarvestani, A. Soltani, et al, applied self-organizing map (SOM), radial basis function network (RBF), general regression neural network (GRNN) and probabilistic neural network (PNN) are tested on the Wisconsin breast cancer data (WBCD) and on the Shiraz Namazi Hospital breast cancer data (NHBCD) and concluded RBF and PNN were proved as the best

classifiers in the training set. However the PNN gives the best classification accuracy when the test set is considered.

Phetlasy, Sornxayya, et al. proposed a hybrid method for data classification with two different classifier algorithms. The first classifier responds to reduce FN, and the second classifier is in charge of reducing FP. The five algorithms are Sequential Minimal Optimization (SMO) for SVM, Naïve Bayes (NB), decision tree J48, Instancebased learning IBK algorithm for K-Nearest Neighbor, and Multilayer Perceptron (MLP) for Neural Network. The author obtained the best result of 99.13% accuracy.

Uma Ojha and Dr. Savita Goel were also discussed about the study on the prediction of breast cancer recurrence using data mining techniques. The research was applied by both clustering and classification algorithms. The results show that decision tree and Support vector machine (SVM) came out with the best predictor 80% accuracy.

Ahmed Iqbal Pritom, shahed anzarus sababa, Md. Ahadur Rahman Munshi, Shihabuzzaman Shihab predicts whether the breast cancer is recurrent or not. Implemented on C4.5 Decision Tree, Naive Bayes and Support Vector Machine (SVM) classification algorithm was implemented.

4. PERFORMANCE ANALYSIS OF DIFFERENT METHOD
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Author	Technique	Dataset	Accuracy
K. Rajendra Prasad, C. Raghavendra, K Sai Saranya	Support Vector Machine	570	95.3%
Suganthi Jeyasingha, Malathy Veluchamy,	Random Forest	650	96.777%
Elouedi, Hind, et al	C4.5	570	95.14%
Lavanya D., and K. Usha Rani	Classification and Regression technique	600	96.19%
Sarvestani, A. Soltani	Probabilistic Neural Network	670	97.23%

Ahmed Pritom,shahed anzarus Md. Rahman Shihabuzzaman Shihab	Iqbal sababa, Ahadur Munshi,	Decision tree c4.5,support vector machine, naïve Bayes algorithms	570	Decision tree=93.6% C4.5=95.14% SVM=95.3% Navie Bayes=85.6 %
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5. PROPOSED RESEARCH:

Breast cancer starts to grow in the human body when cells in the breast are growing most in an unexpected manner. After these cells grow, it can be seen by x- ray. Basically, there are two types of breast cancer, cancer that spread into another area and cancer that can't spread into another area. Among the world women breast cancer is the first and the most leading of death of women and the accurate diagnosis have lots of advantage to prevent and detection of the disease. Data mining is a technique can support doctors in the decision making process. As breast cancer recurrence is high, good diagnosis is important. Many studies have been conducted to analyze Breast Cancer Data. This research is going to be implemented by different data mining algorithms like Bayes , support vector machine and Decision tree (j48),Neural Network. So to get a more accurate value about the recurrence of breast cancer we are going to use data sets which were taken from the Kaggle repository

6. CONCLUSIONS

In this survey paper ,we have studied different techniques to diagnosis the breast cancer .From this paper,we came to know the different techniques with the accuracy levels.In future ,can be developed in Neural network system with the high accuracy levels. This method of classification through machine learning algorithm is a reliable and efficient methodology and this can be used for any kind classification provided the reliable data sets are available. It will increase the accuracy level of the system.

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