PREDICTION OF BREAST CANCER

Pooja Sree Gurrala U00885267

Kavya Bojja U00893842

Submission date: 4/15/2023

OBJECTIVES

- To predict breast cancer
- Implementation of algorithms.
- Describing the dataset.
- To perform visualization of data and understand behavior of data.
- Implementation of algorithms.
- To evaluate the model with test samples.
- Analyzing the results using different performance metrics.
- Comparing the results and selecting algorithm with best performance.

INTRODUCTION

Breast cancer is a common type of cancer that affects breast tissue in women. Determining whether a breast lump is malignant(cancerous) or benign(non-cancerous) is an important aspect in the field of diagnosis. Ultrasounds and Mammograms are typical diagnostic tests that may help in the identification of abnormalities but are not always effective. Several ML models are implemented to increase the efficiency of breast cancer detection.

BACKGROUND

- Being the most prevalent cancer in women and responsible for approximately 30% of all cancer diagnoses, breast cancer is a serious global public health problem. For successful treatment and better patient outcomes, early identification and detection of breast cancer are essential.
- Mammography, ultrasound, and magnetic resonance imaging (MRI) have all been used in the past to diagnose breast cancer, along with biopsy and pathological examination of tissue samples. However, these tests aren't always definitive, thus better and more dependable means of identifying and diagnosing breast cancer are required.
- Artificial intelligence (AI) and machine learning techniques have become effective tools for the early identification and diagnosis of breast cancer in recent years. Machine learning algorithms are able to spot trends and forecast the possibility of malignant growths with a

high degree of accuracy by evaluating a significant quantity of data, including patient demographics, clinical characteristics, and imaging findings.

- Using a range of data sources, including mammograms, patient histories, and genetic information, researchers have created a number of machine learning models and algorithms to predict the aggressiveness of breast cancer. The accuracy of breast cancer detection has been improved, and there is less need for unneeded biopsies and procedures because to the use of these models.

In summary, the development of breast cancer prediction models has the potential to transform the diagnosis and treatment of ailments, resulting in sooner identification, better patient outcomes, and lower medical expenses.

METHODOLOGY

1. Data Preparation

2. Data Preprocessing

3. Data Visualization

4. Implementation of Models using,

- Logistic Regression
- Random Forest
- Support Vector Machine

5. Model Evaluation using,

  - Accuracy
  - F1-score
  - Precision
  - Recall
  - Confusion matrix

REFERENCE

- “Prediction of Breast cancer, Comparative Review of Machine Learning Techniques, and their Analysis” by Noreen Fatima, Li Liu, Sha Hong, Haroon Ahmed. IEEE access 2020