

## Breast Cancer Detection Using Machine Learning

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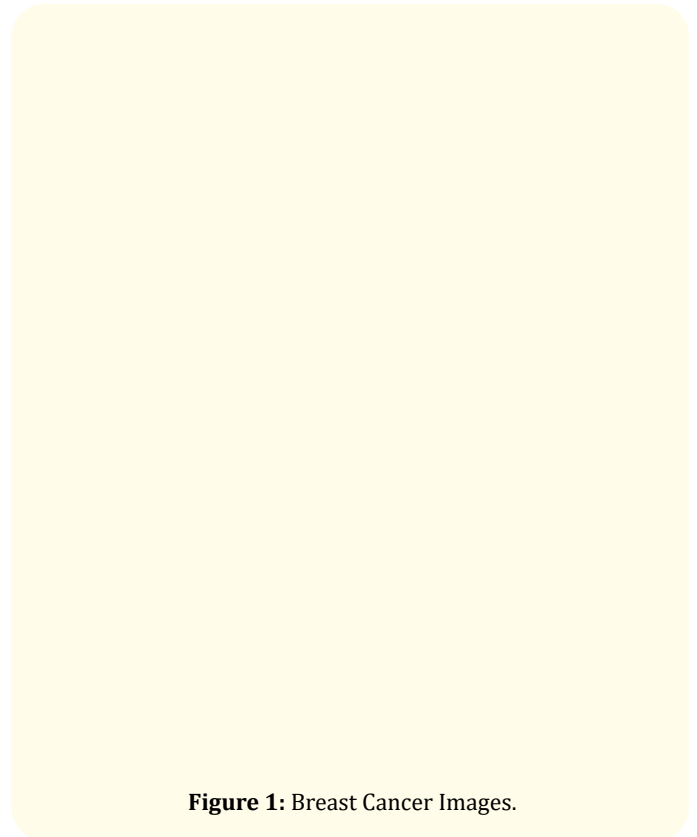
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The span of human life is come down due to the current day-to-day life cycle. Many diseases are coming into the picture in human life. One of the dangerous diseases is cancer. There are many types of cancers affecting the human body. Most women are affected by one kind of cancer called Breast Cancer (BC). Globally 2,87,850 estimated cases of BC in 2022. The main reason behind this is unable to identify the BC in the early stages. Early stage detection is essential and even can have a high percentage of saving the breast cancer patient. The clinics follow many traditional methods to identify breast cancer. But unfortunately, failing to detect in the early stages. Due to this, many women are led to the death stage. Engineering mechanisms play a vital role in detecting breast cancer in women.

Machine Learning (ML) is an emerging technology used in medical diagnosis. Detection of breast cancer also uses ML and has witnessed many successful cases. Early stage detection of breast cancer is essential in the diagnosis process. Medical image processing using machine learning and deep learning techniques is the route to finding breast cancer. Some learning mechanisms like supervised, unsupervised, and reinforcement learning can be used to diagnose breast cancer. These learning mechanisms contain many concepts like classification and regression. Among many methods, I present various methodology and algorithms for identifying breast cancer. Some of the methods and algorithms are Support Vector Machine (SVM), Biclustering mining and Adaboost Algorithm, Convolution Neural Network (CNN), Recurrent Neural Network (RNN), Breast Imaging reporting and data system (BI-RADS), ICD-9 diagnosis codes from an existing EHR data repository, Hierarchical Attention bidirectional networks (HA-BiRNN), Clinical

decision support system, Outlier Detection Algorithm (ODA) and many methods are available.

According to the South Australian survey, the mammography screening model has reduced 41% of death rates. Two types of images are used for screening to detect breast cancer. The first one is mammography images, and the second is histopathology images. The images looks as follows.



**Figure 1:** Breast Cancer Images.

Figure 1 shows that the sample breast cancer images of mammography and histo-pathology images respectively. ML models are playing vital role for finding the breast cancer in early stages. Many researchers are finding the breast cancer in early stages using machine learning and deep learning models. It's saving the many women's life. My conclusion that early stage detection of breast cancer is very critical and even though machine learning models giving prominent results to early stage detection.