**Project Title:** Breast Cancer Analysis and Prediction

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**Introduction**

Breast cancer is among the 4 leading cancers in women worldwide (ie, lung, breast and bowel [including anus], stomach, and prostate cancers). The IARC statistics show that breast cancer accounts for 25% of all cancer cases diagnosed in women worldwide. Breast cancer (BC) is one of the most common cancers among women worldwide, representing the majority of new cancer cases and cancer-related deaths according to global statistics, making it a significant public health problem in today’s society.   
The early diagnosis of BC can improve the prognosis and chance of survival significantly, as it can promote timely clinical treatment to patients. Further accurate classification of benign tumors can prevent patients undergoing unnecessary treatments. Thus, the correct diagnosis of BC and classification of patients into malignant or benign groups is the subject of much research. Because of its unique advantages in critical features detection from complex BC datasets, machine learning (ML) is widely recognized as the methodology of choice in BC pattern classification and forecast modelling.  
Classification and data mining methods are an effective way to classify data. Especially in medical field, where those methods are widely used in diagnosis and analysis to make decisions.

**Objectives:**

1. Early Detection of Breast Cancer
2. Predicting the nature of tumor based on key features

**Role of Machine Learning:**

An extensive search was conducted relevant to the use of ML techniques in cancer susceptibility, recurrence and survivability prediction. The advancements in the field of ML have led to more intelligent and self-reliant computer-aided diagnosis (CAD) systems, as the learning ability of ML methods has been constantly improving. Machine Learning has vast scope of improving the detection of Breast cancer by using available breast cancer patients data which is from Electronic Health Care Records, Hospitals, Insurers and etc. Machine Learning Can be used for early detection of cancers. Recent advancements of ML with deeper and extensive representation approaches, commonly known as deep learning (DL) approaches, have made a very significant impact on improving the diagnostics capabilities of the computer-aided diagnosis (CAD) systems.