**Breast Cancer Prediction Model**

**Write-Up**

**Problem statement**

Breast cancer is one of the main causes of cancer death worldwide. Early diagnostics significantly increases the chances of correct treatment and survival, but this process is tedious and often leads to a disagreement between pathologists. Computer-aided diagnosis systems showed the potential for improving diagnostic accuracy. But early detection and prevention can significantly reduce the chances of death. It is important to detect breast cancer as early as possible.

**Solution**

We will be building a model using machine learning algorithms which will predict breast cancer.

**Technology Used**

Python (along with pandas, matplotlib, sklearn libraries).

**Procedure**

• Applied SVM, K-Nearest Neighbors, Logistic Regression, Naïve Bayes and Random Forest algorithms to the Wisconsin Breast Cancer dataset from the UCI ML Repository (Kaggle)

• To predict whether the breast cancer tumor is malignant or benign.

• Compared the performance results of all the algorithms based on the accuracy and ROC values.

**Dataset**

https://www.kaggle.com/uciml/breast-cancer-wisconsin-data

**Procedure:**

Before running the algorithms on the dataset, data preprocessing has been done. Thereafter, implemented SVM, K-Nearest Neighbors, Logistic Regression and Naïve Bayes as well as Random Forest algorithm for classification.

In our results we have compared the different algorithms based on the accuracy and ROC values and showed that SVM is the best among all in determining benign and malignant tumors.

**Conclusion**

The conclusion drawn from this project is that benign cancers are more common than malignant cancers. Malignant cancers are dangerous to health while benign tumors are not much dangerous to health, but rarely, benign cancer may turn into malignant if not treated. If symptoms are seen, it should not be ignored as then, if serious, it may lead to death. Computer-aided diagnosis systems showed the potential for improving diagnostic accuracy. But early detection and prevention can significantly reduce the chances of death. It is important to detect breast cancer as early as possible.