Breast Cancer Detection using Logistic Regression: A Machine Learning Approach

Abstract:

This paper proposes a machine learning approach for detecting breast cancer using logistic regression. The proposed model is trained and tested on a dataset containing various attributes of breast tumors. The results show an accuracy of 96.70%, demonstrating the effectiveness of the proposed approach in classifying breast tumors as malignant or benign.

Introduction:

Breast cancer is a significant health concern worldwide. Early detection is crucial for effective treatment and survival. Machine learning techniques have shown promise in detecting breast cancer. This paper explores the use of logistic regression for breast cancer detection.

Methodology:

The dataset used contains 683 instances with 11 attributes. The attributes include tumor size, shape, and other characteristics. The dataset is split into training (80%) and testing (20%) sets. The logistic regression model is trained on the training set and evaluated on the testing set.

Results:

The proposed model achieves an accuracy of 96.70%. The confusion matrix shows [84, 3, 3, 47]. Cross-validation results show an average accuracy of 96.70% with a standard deviation of 1.96.

Conclusion:

This paper demonstrates the effectiveness of logistic regression in detecting breast cancer. The proposed approach can assist in early detection and treatment, improving patient outcomes. Future work includes exploring other machine learning algorithms and expanding the dataset to improve the model's performance.