

## Breast Cancer Prediction Using Score-Level Fusion of Machine Learning and Deep Learning Models

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**Abstract :** Breast cancer is one of the most common types in women. Early prediction of breast cancer helps physicians detect cancer in its early stages. Big cancer data needs a very powerful tool to analyze and extract predictions. Machine learning and deep learning are two of the most efficient tools for predicting cancer based on textual data. In this study, we developed a fusion model of two machine learning and deep learning models. To obtain the final prediction, Long-Short Term Memory (LSTM) and ensemble learning with hyper parameters optimization are used, and score-level fusion is used. Experiments are done on the Breast Cancer Surveillance Consortium (BCSC) dataset after balancing and grouping the class categories. Five different training scenarios are used, and the tests show that the designed fusion model improved the performance by 3.3% compared to the individual models.

**Keywords :** machine learning, deep learning, cancer prediction, breast cancer, LSTM, fusion

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