

AI-Assisted Breast Cancer Diagnosis: Deep Learning on RSNA Mammogram Images for Improved Classification(Conference Paper)

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Abstract

Breast cancer remains a significant global health challenge, causing many cancer-related deaths among women. Early detection improves survival rates, but primary prevention remains challenging due to unclear causes. Mammograms, with their ability to detect masses and micro-calcification, serve as the primary screening tool for breast cancer. However, accurate diagnosis can be hindered by poor contrast and fuzzy images of groups and benign glandular tissue. This research aims to enhance early breast cancer diagnosis using deep learning approaches on a newly published RSNA Screening Mammography data set. To increase the accuracy of early breast cancer detection, the researchers concentrated on reprocessing mammography pictures and analyzing breast density. We conducted an experiment using 1081 mammogram images and tested them on several pre-trained models, such as EfficientNetB0, Resnet50, and a conventional 15-layer CNN model. Interestingly, the 15-layer CNN model performed remarkably well, achieving an impressive accuracy of 97.6 per cent. This paper presents a comprehensive investigation into the depth of information within mammography images, highlighting the significance of breast density in the context of breast cancer detection. Additionally, the study explores various data pre-processing techniques to achieve more reliable and accurate results.

By delving into these aspects, the research aims to advance breast cancer detection methods, potentially leading to improved outcomes in early diagnosis and treatment. © 2023 IEEE.

Author keywords

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