

Using NSCTS and DCNN, Rapid Prediction and Forecasting of Breast Cancer

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Abstract:

Utilizing the CAD system, which aids radiologists in various diagnostic procedures, a recent study has been conducted on the early identification of breast cancer. Next to lung cancer, breast cancer ranks among the most deadly diseases. Initially, detection is done based on screening tests done through Magnetic resonance imaging (MRI), subsequently Infrared thermography, and digital mammography (DM). Whenever a suspicion is raised, these tests might be recommended by the specialist. Region-based segmentation is used for the test picture in this work, while NSCTS (Non-subsample Contourlet transform segmentation) is used for preprocessing. ResNet-164 DCNN architecture performs feature extraction and classification between normal and aberrant tumor pictures. The diagnosis system adopts the deep learning technology to increase its performance rate. The approach to prediction starts with screening test photos, then preprocessing to enhance the image quality, ROI detection, ROI segmentation, and classification. The resulting images are examined using a variety of evaluation measures, including performance rate, sensitivity, specificity, and accuracy. When compared to other recent work, the outcome is exceptional. The obtained accuracy, sensitivity of the proposed system is 98.58% and 98.78%. The application takes advantage of the MIAS mammography image dataset.

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I. Introduction

Worldwide, a substantial proportion of women die from breast cancer, which is a condition that is very common. Numerous diagnostic techniques, such as digital mammography (DM), Infrared thermography, MRI (magnetic resonance imaging), ultrasound (US), microscopic (histological) images, and microwave images, are used to detect the breast. Depending on each unique instance, one or more of these tests may be advised in addition to others. The usage of hardware and software, particularly in the areas of machine learning and deep learning, has significantly advanced recently in order to produce high-quality diagnostic results.

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