Breast cancer classification using deep learning

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Abstract:

Breast Cancer is the most common type of cancer in women;one out of 8 females worldwide is affected by breast cancer.This is diagnosed by the identification in malignancy of breast tissue cells.Here I am classifying the different types of tumour formed in the breast and classify it into cancerous or non-cancerous.Thisdataset collected in Brazil from 82 patients, which consists of 7909 histopathology images. Using various algorithms and tools, advanced medical image processing techniques work on histopathological images captured by a microscope and then interpret them.For the retrieval of medical imaging and pathological devices, machine learning algorithms are also used.A tiresome activity is manual identification of a cancer cell which requires human error and thus computer assistance.This is normally achieved in deep learning by extracting characteristics from a convolutional neural network (CNN) and then classifying them using a fully connected network.In the area of medical imaging, deep learning is widely used as it does not involve previous experience in a related field. I have equipped a pre-trained convolutional neural network which ResNet50, it's pre-trained on ImageNet database, to learn the domain-specific characteristics needed to identify the histology images and obtained 97.77 percent prediction accuracy.

Keywords:

Histopathology image; Medical image processing; Pre-trained Convolutional neural network; ResNet50; Deep learning; Breast cancer

1. Introduction:

Breast cancer is most likely to develop amongst all forms of cancer in women.Breast cancer accounts for 14 percent of cancers in Indian women, with it being the most prevalent form of cancer in women.It is estimated that an Indian woman is diagnosed with breast cancer every four minutes.Breast cancer, both in rural and urban India, is on the increase [1, 2]. The best possible way to cure the cancer is to detect the cancer by an efficient detection system.