Deep Learning Techniques For Breast Cancer Risk Prediction

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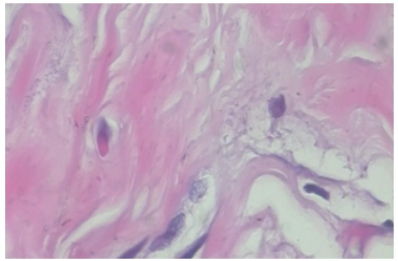
The Challenge:

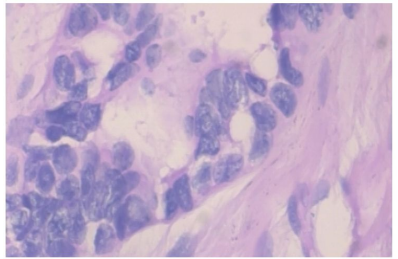
Build an algorithm to automatically identify whether a patient is suffering from breast cancer or not by looking at biopsy images. The algorithm had to be extremely accurate because lives of people is at stake.

Dataset:

Dataset is obtained from kaggle it composed of microscopic images of breast cancer tissue.



Benign Sample



Malignant Sample

CNN Architecture

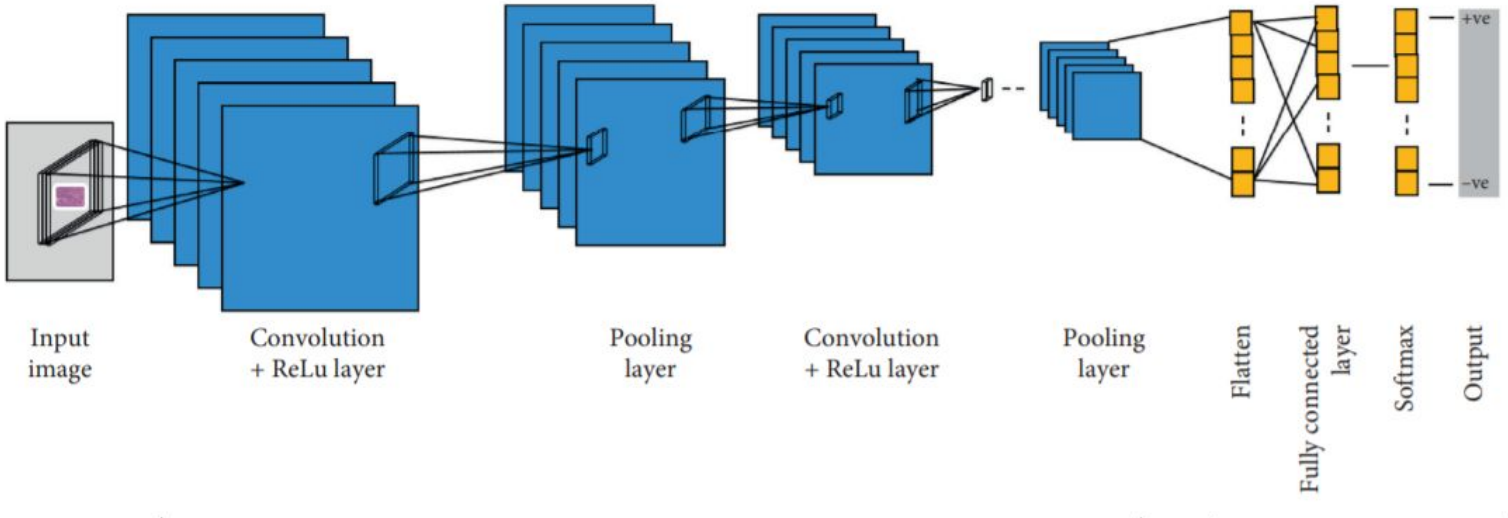
Input: A Matrix of pixel values in the shape of [WIDTH, HEIGHT, CHANNELS],our input size is [32 x 32 x 3].

Convolution: The purpose of this layer is to receive a feature map.Feature detection is based on ‘scanning’ the input with the filter of a given size and applying matrix computations in order to derive a feature map.

Pooling: The goal of this layer is to provide spatial variance, which simply means that the system will be capable of recognizing an object even when its appearance varies in some way.

Fully Connected: In a fully connected layer, we flatten the output of the last convolution layer and connect every node of the current layer with the other nodes of the next layer. Output layer will have 1 neuron to give us the prediction.

CNN



CNN architecture for automatic detection of breast cancer.