"Breast Cancer Detection App"

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ABSTRACT

The classification of breast cancer has been the subject of interest in the fields of healthcare and bioinformatics, because it is the second main reason of cancer-related deaths in women. Breast cancer can be analyzed using a biopsy where tissue is eliminated and studied under microscope. The identification of problem is based on the qualification and experienced of the histopathologists, who will attention for abnormal cells. However, if the histopathology's is not well-trained or experienced, this may lead to wrong diagnosis. With the recent proposition in image processing and machine learning domain, there is an interest in experiment to develop a strong pattern recognition based framework to improve the quality of diagnosis. In this work, we will use the image feature extraction approach and machine learning approach for the classification of breast cancer using histology images into benign and malignant. Using Histopathological image we can preprocess this image after that apply feature extraction and classify the final result using CNN Classification techniques.

Keyword: *Breast Cancer, Cancer Detection, Doctor Consultation, Cancer Types, Treatment*.

1.Introduction

Breast cancer is the most common and dangerous intrusive cancer in women and the second main effect of cancer death in women, after lung cancer. The International Agency for Research on Cancer (IARC), which is part of the World Health Organization (WHO), the numbers of deaths reasoned by cancer in the year of 2012 only come to around 8.2 million. The number of new cases is expected to growth to more than 27 million by 2030.
Finding breast cancer quick and getting state-of-the-art cancer treatment are the key plan of action to avoid deaths from breast cancer. In existing, it is a widely-used way to identification of breast cancer by identifying hematoxylin and eosin (H&E) stained histological slide preparations that are checked under a high powered microscope of the changed area of the breast. In medical practice, classification of breast cancer biopsy result into different plans (e.g. cancerous and noncancerous) is manually driven by experienced pathologists.

1.1 Methodology

Procedure that will be adopted during the completion of micro-project are as follows:

1) Firstly, I had searched various Emerging Trends In Information Technology related topics on the internet and finally choose the topic "Cancer Detection".
2) This topic will be divided into several sub-topics for better understanding.
3) Detailed study will be done on the topic, and various pictures will be collected related to it.
4) Later, All the sub-topics and pictures shall be perfectly arranged into the specified format and all the mistakes committed will be resolved.
Finally, we decided to work on Breast caner detection ,which is very crucial and uncontrolled after certain satge.

2. Modeling And Analysis

System Architecture Diagram

Classifying breast cancer histopathological images automatically is an important task in computer assisted pathology analysis. However, extracting informative and non-redundant features for histopathological image classification is challenging.

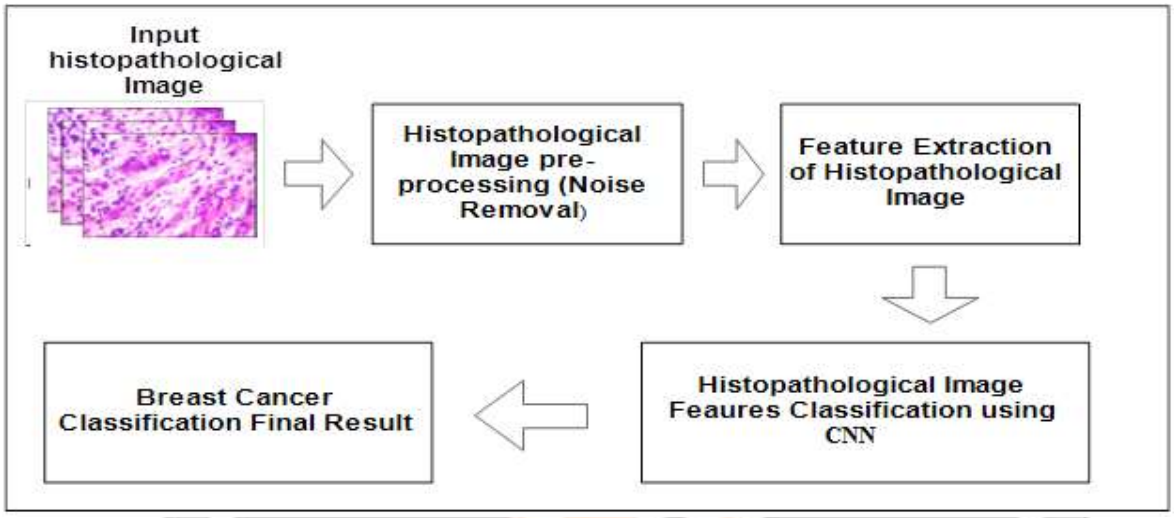

Fig 2.1: Proposed System

The Proposed system will be using neural networks as a primary model .Neural networks(CNN) have shown to be very accurate categories Breast tissue can be broadly classified into 3 :

A. Masses/Lumps:

B.Breast micro - calcification:It occurs when there are small calcium deposits in the tissues of the breast. They are divided into benign, suspicious or high probability of malignancy.

Architectural distortions: In architecture distortion, the normal architecture of the breast is distorted without any associated mass. Such distortion may look like abnormal tissues arrangement radiating from a point, focal retraction or somewhat random pattern. These types of distortion can be the clear center (central opacity) or dense Centre. Apart from the one mention above, intra-mammary lymph node, asymmetric tubular structure, overall asymmetry of the breast tissue and the asymmetric focal density are some of the other abnormalities.

3. Result And Discussion

Proposed Algorithm
Algorithm - CNN

CNN algorithm used for the detection of breast cancer to gives the input as a image of breast cancer and detect the output.

Neural networks are a set of algorithms. They interpret sensory data through a kind of machine perception, labeling or clustering raw input. The patterns they recognize are numerical, contained in vectors, into which all real-world data, be it images, sound, text or time series, must be translated. Neural networks help us cluster and classify. They help to group unlabeled data .

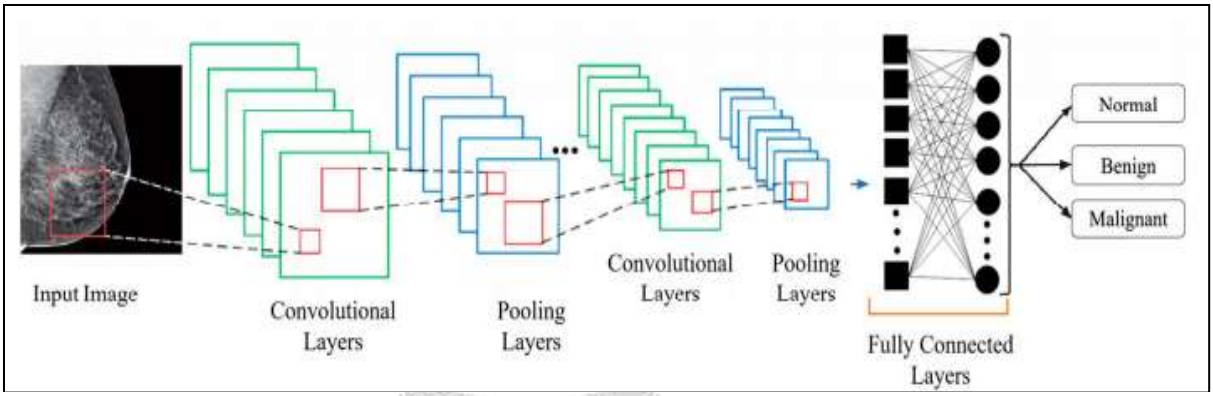

Fig 2: Fig Fig 3.1: CNN Algorithm Steps

CNN Layers:

Convolutional Layer: It applies 14 5x5 filters (extracting 5x5-pixel sub-regions),

Pooling Layer: This will perform max pooling with a 2x2 filter and stride of 2 (which specifies that pooled regions do not overlap).

Convolutional Layer: It applies 36 5x5 filters, with ReLU activation function

Pooling Layer: Again, performs max Pooling with a 2x2 filters and stride of 2. 1,764 neurons**,** with the dropout regularization rate of 0.4 (where the probability of 0.4 that any given element will be dropped in training)

Dense Layer (Logits Layer): There are ten neurons, one for each digit target class (0-9).

Important modules to use in creating a CNN:

Conv2d (). Construct a two-dimensional convolutional layer with the number of filters, filter kernel size, padding, and activation function like arguments.

max_pooling2d (). Construct a two-dimensional pooling layer using the max-pooling algorithm.

Dense (). Construct a dense layer with the hidden layers and units.

Presently available systems for the same

The methodology is shown in Figure. The main idea is to use k-NN algorithm to predict the class labels in the test set. Then for each classifier, the con formal prediction algorithm is applied to calculate the non-con formality score for each prediction and use it to calculate the confidence. The con-formal prediction algorithm is fully described.

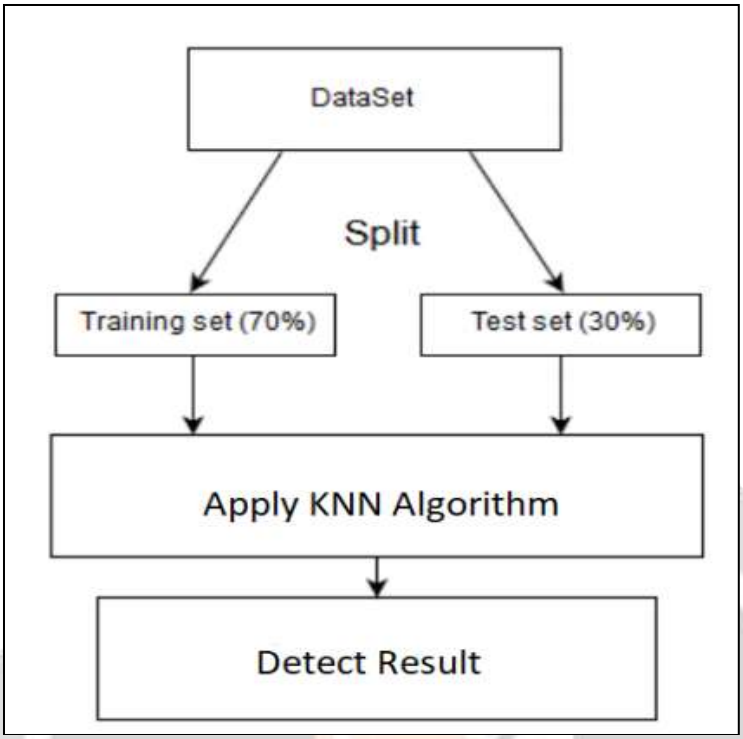

Figure 3.2: Map of India (Courtesy: Google map).

Figure captions should be of size 11, not indented. Note the full stops after figure numbers, and figure captions.
Space above figure caption should be maintained (1.5 line spacing)
For tables,Table caption is to be written above the table as shown
Example.

Table 1.1. Nominal product characteristics of RADARSAT-1 SLC.

Beam mode	Beam position	Product type	Nominal incidence angle (degrees)	Nominal resolution Range × azimuth (m)	Nominal Image Coverage (km × km)
Standard	S2	SLC	24-32	11.6 × 5.1	100 × 100
Fine	F5	SLC	45-48	4.6 × 5.1	50 × 50

4. CONCLUSIONS

In this work, we work on histopathological images by using CNN Classification with various configurations for the classification of breast cancer histology images into benign and malignant. The designed CNN Classification worked well on histopathological images features in classification tasks. However, the performance of the CNN Classification is better compared to the one of the existing classification methods. CNN have become state-of-the-art, demonstrating an ability to solve challenging classification tasks. This proposed work successfully classifies using breast cancer histology images into benign and malignant.

5. REFERENCES

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