1.Introduction:

1.1 overview:

Machine learning is widely used in bio informatics and particularly in breast cancer diagnosis. In this project, I have used certain deep learning techniques for detection of breast cancer using image recognition. Cancer diagnosis is one of the most studied problems in the medical domain. Several researchers have focused in order to improve performance and achieved to obtain satisfactory results. Early detection of cancer is essential for a rapid response and better chances of cure. Unfortunately, early detection of cancer is often difficult because the symptoms of the disease at the beginning are absent. Thus, it is necessary to discover and interpret new knowledge to prevent and minimize the risk adverse consequences.

1.2 purpose :

The main purpose of using deep learning techniques is to predict the cancer early using CNN.Early detection can give patients more treatment options. In order to detect signs of cancer, breast tissue from biopsies is stained to enhance the nuclei and cytoplasm for microscopic examination. Then, pathologists evaluate the extent of any abnormal structural variation to determine whether there are tumors.

2. LITERATURE SURVEY

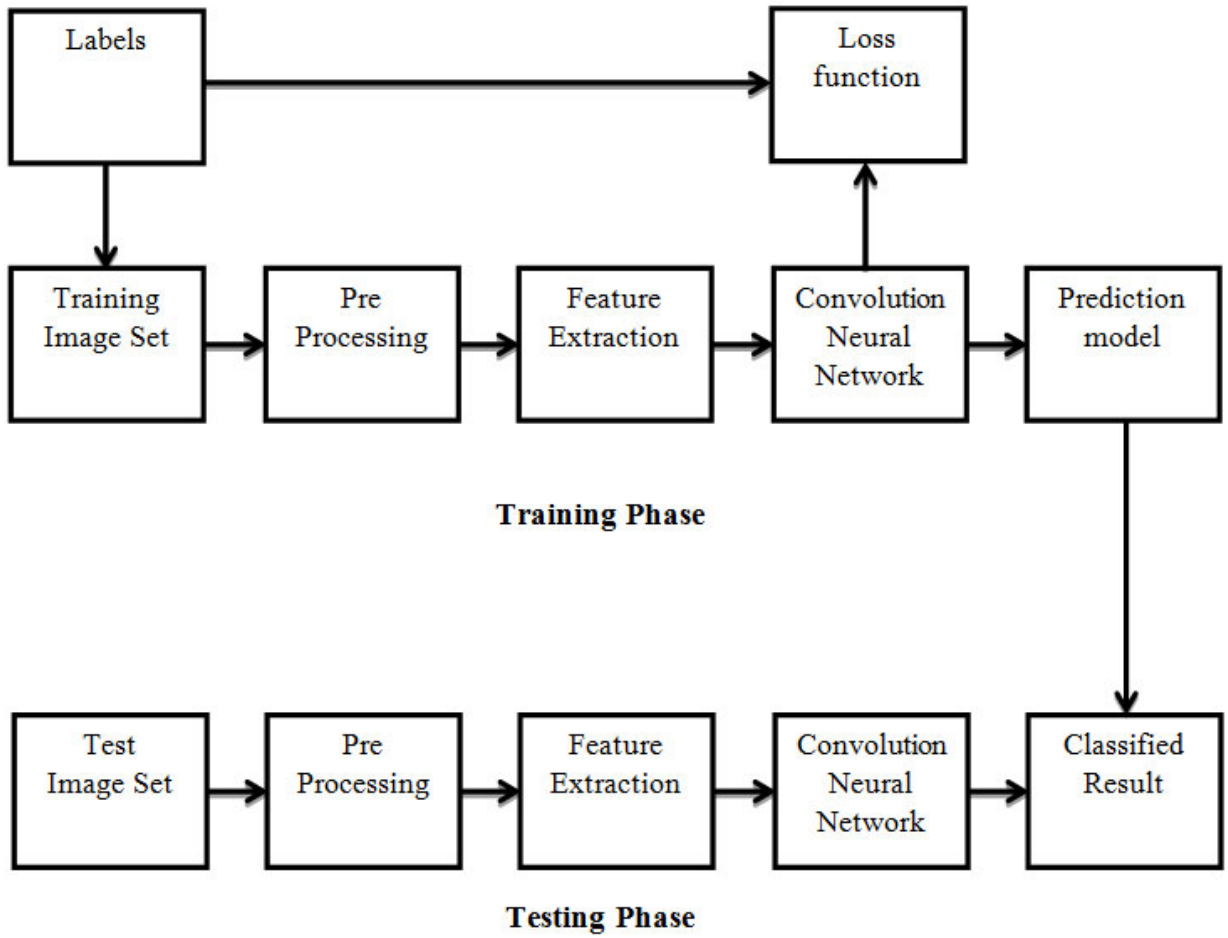
2.1 existing problem : Deep learning techniques for breast cancer prediction using python.After skin cancer, breast cancer is the most common cancer diagnosed in women in the United States. Breast cancer can occur in both men and women, but it's far more common in women.

Substantial support for breast cancer awareness and research funding has helped created advances in the diagnosis and treatment of breast cancer.

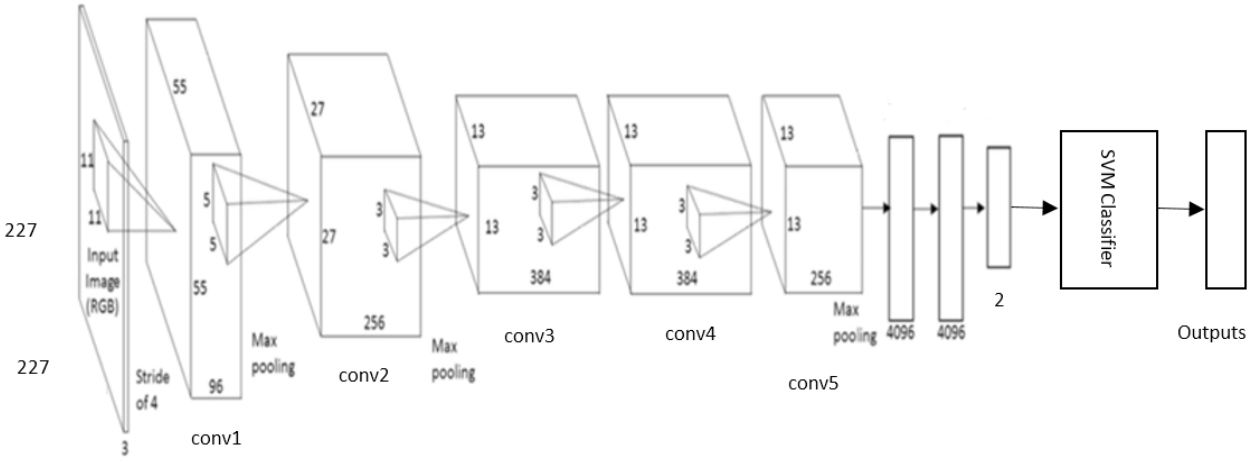
2.2 proposed solution : The prediction of breast cancer will be done by using CNN which helps the patient for recognition of cancer easily

3.THEORITICAL ANALYSIS

3.1 Block diagram



3.2 Hardware/Software Designing



4.EXPERIMENTAL INVESTIGATION

Convolutional Neural Network (CNN) might seem intimidating for a
beginner.This project will provide an overview of how to build a model from scratch to detect breast cancer using Tensorflow and Keras.

The content of the project is listed as follows :

- Data processing
- Model Building
- Model Training
- Model Evaluation
- Final Model Prediction

A five-layer convolution network was built where Conv2D() and MaxPooling2D() are stack together as one layer. Then, the output of the final convolutional layer will be flattened and fit to fully connected neurons.

tf.keras.layers.Conv2D(): The convolution layer which improves image recognition by isolate images features

tf.keras.layers.MaxPooling2D(): a layer to reduce the information in an image while maintaining features

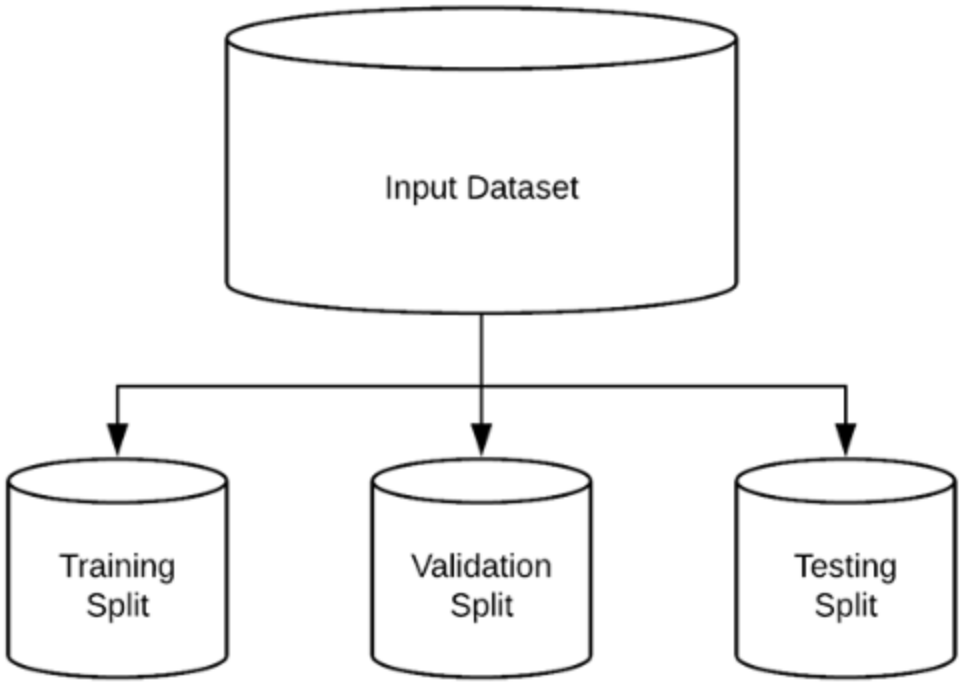
tf.keras.layers.Flatten(): flattened the result into 1-dimensional array

tf.keras.layers.Dense(): added densely connected layer

Additionally, before the model is fitted for training, I set up data generators to read images from source folders instead of labeling the image one by one. In basic concept, ImageDataGenerator labels

images based on the directory the image is contained. This generator
points to the sub-directory of the data. The code below can be described as below:
Grayscale normalization is performed in order for CNN to converge faster by using rescale parameter. The normalization transforms the image pixel from [0...255] to [0...1]
Created generator namely train_generator . Where train_generator points to the sub-directory of train data
Before the model is fitted for training,it is necessary to configure the
specifications as follows:
loss: breast cancer detection is using sigmoid activation in the final step, which resulted in either 0 or 1 (normal or pneumonia). Therefore, binary_crossentropy is the most suitable loss function
optimizer: adam is used
metrics: accuracy is the measurement metric to obtain the prediction accuracy rate on every epoch
Then, trained the model for 50 epochs with 250 steps on every epoch
Once the model is completely trained, the test dataset will be used to ensure unbiased prediction of a final model. This model evaluation step is useful to measure how well the trained model predicts unseen data.
Hence, the model is ready to make a prediction.

5.FLOW CHARTS



6.RESULTS:

The model presents CNN based breast cancer prediction model that detects the patient has cancer or not .A CNN architecture was designed for feature extraction was designed

7.ADVANTAGES AND DISADVANTAGES

Advantages: Prediction models helps in identifying the cancer early which may help in curing the cancer easily and early
Disadvantages: High computational cost and your GPU should be quite good if not it will be very slow

8.APPLICATION

This Breast Cancer prediction through X-rays will make patients and doctors to know about the cancer early and they can take certain steps for curing the cancer

9.CONCLUSION

In this model prediction of breast cancer is done by using CNN . By this type of models it will be very helpful for the detection of cancer

10.FUTURE SCOPE:

Breast cancer is the most common malignancy in women with post-operative recurrence and metastases acting as the leading cause of breast-cancer associated mortality .The number of patients in post-treatment surveillance programs is increasing secondary to the survival benefit of screening mammography and adjuvant therapies. After curative primary treatment, approximately 15% of breast cancer survivors will develop a second breast malignancy within ten years . This risk is further compounded

by personal characteristics such as age and family history.

11.BIBLOGRAPHY

1.DATASET:
https://www.kaggle.com/shivagayatrianandas/breast-cancer-detection
2.CNN breast cancer prediction article:
https://towardsdatascience.com/building-a-simple-machine-learning-model-on-breast-cancer-data-eca4b3b99fa3

12. APPENDIX

a.Source code:

https://github.com/SmartPracticeschool/llSPS-INT-3410-Deep-Learning-Techniques-for-Breast-Cancer-Risk-Prediction-using-Python

b.Output ScreenShots:

IISPS_INT_3410_Deep Learning T | Student Dashboard | SmartPracticeschool/IISPS-INT-3 | Image Recognition System

localhost:5000

Apps | All JNTU World | 123Movies4U - 123... | GMC | Login | Sample questions -... | School Detail | Using your IELTS ce... | Dr Marco Paret | Home | British Hyp... | Other bookmarks

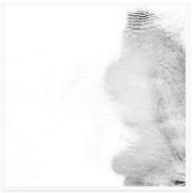
Cancer detection

cancer detection

Breast cancer is cancer that forms in the cells of the breasts.breast cancer is the most common cancer diagnosed in women in the United States. Breast cancer can occur in both men and women, but it's far more common in women.

Please upload an x-ray image

Choose...



Result: the result is : yes