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A Flask based web application to predict death in women due to Breast Cancer

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Abstract: Breast cancer is the leading cause of cancer death in women. Early detection and diagnosis are the most effective strategy to control tumour progression. The currently recommended imaging method for early determination and diagnosis of breast tumours. Classifications of still a big challenge and play a crucial role in assisting radiologists in accurate diagnosis this project, we propose a convolution neural network-based classification technique which is one of the deep learning techniques. The architectural model of CNN is used for the classification of breast cancer into normal and abnormal.

Pre-processing is performed on the input mammogram image to remove unwanted elements. Segment the tumour region using morphological operations, and highlight the region on the original mammogram image. If the mammogram image is normal, it indicates that the patient is healthy. BC patients and healthy patients are classified using Random Forest (RF) Classifiers.

Keywords: Deep learning, Cancer Detection, CNN, Feature Extraction.

I. INTRODUCTION

Breast cancer is one of the most common cancers affecting women worldwide. Early detection of breast cancer is crucial for successful treatment and can significantly improve patient outcomes. Medical imaging techniques, such as mammography and ultrasound, are commonly used to detect breast cancer. However, the interpretation of these images can be challenging and subject to human error. Recent advances in deep learning have shown promise in improving the accuracy and efficiency of breast cancer detection. Deep learning models can analyse large amounts of medical image data and identify subtle patterns and features that may not be visible to the human eye. These models can also learn and adapt to new data, improving their performance over time.

Breast cancer is a complex disease that can present in different ways, making it difficult to detect in its early stages. Mammography is the most common screening method for breast cancer, but it has limitations, such as high false-positive rates and low sensitivity in women with dense breast tissue. Other imaging techniques, such as ultrasound and magnetic resonance imaging (MRI), can be used to complement mammography but are often more expensive and time consuming. Deep learning algorithms, particularly convolutional neural networks (CNNs), have shown promising results in improving the accuracy of breast cancer detection. These algorithms can learn to detect subtle patterns and features in medical images that may be missed by radiologists, thereby improving the sensitivity and specificity of breast cancer screening. Moreover, deep learning algorithms can be trained on large datasets of medical images, allowing them to learn from a diverse range of cases and improve their performance over time.

II. RELATED WORK

A novel multiclass classification strategy that utilizes one versus-one error correction output codes classification and pairwise t-test feature selection to handle the outlier identification problem. The pathological hallmarks of AD brains are early stage -amyloid oligomers (AOs) and late-stage A plaques. The intention of this initiative is to detect A abnormalities in the early and late phases of Alzheimer's disease Classical applications such as graph partitioning, graph visualization, and graph coarsening have recently been utilized in Graph Convolutional Neural Network (GCNN) architecture to perform graph pooling. This modified GCNN architecture is then used as a graph signal classifier to detect early-stage Alzheimer's disease. Review of contemporary machine learning and deep learning approaches for detecting four brain diseases, including Alzheimer's disease (AD), brain tumours, epilepsy, and Parkinson's disease, in order to determine the most accurate technique for detecting different brain diseases that can be used in the upcoming years. A metabolite-corrected artery input function (AIF) is required for quantitative analysis of PET brain imaging data in order to estimate

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distribution volume and related outcome measures. PET studies that collect arterial blood samples add risk, cost, measurement inaccuracy, and patient discomfort. Machine learning algorithms use psychological MMSE parameters including age, number of visits, and education to predict Alzheimer's disease. Support vector machine and decision tree techniques used. As the combined high-order network (CHON) constructs FCN by combining static, dynamic, and high-level information, whereas the GCN is utilized to integrate non-image information to improve the classifier's performance. ResNet18 and DenseNet201 were utilized to perform the AD multiclass classification challenge. A survey, analysis, and critical critique of recent work on the early diagnosis of Alzheimer's disease using machine learning techniques.

III. EXISTING SYSTEM

The most frequent cause of cancer-related mortality is breast cancer. Finding cancer in its early stages is crucial. For the purpose of diagnosing breast cancer data, a variety of machine learning approaches are accessible. A machine learning approach for automated breast cancer diagnosis is presented in this research. The paper also compares SVM, Random Forest, KNN, Logistic Regression, and Naive Bayes classifiers. The system's performance is evaluated without regard to correctness or precision.

IV. PROPOSED SYSTEM

Breast cancer is regarded as a prevalent type of cancer in women and develops in breast cells. In addition to lung cancer, breast cancer poses a serious threat to the lives of women. In this paper, a convolution neural network (CNN) approach is suggested to improve the automatic detection of breast cancer.

V. SYSTEM MODEL

Image is given as the input initially. After that, pre-processing is done for the image where it processes all the data present in the image. As a part of segmentation, the image is segmented and passed to the next level. In feature extraction, the features are extracted and then classified. Based on the classification done metrics are calculated.

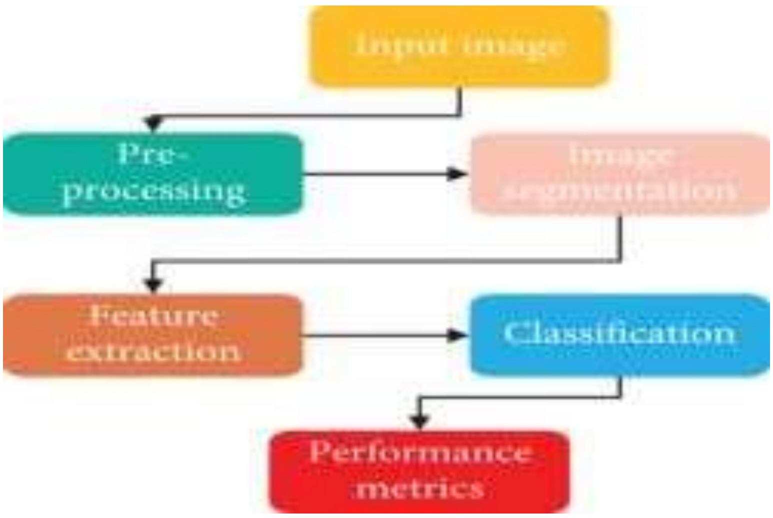

FIG 5.1 SYSTEM ARCHITECTURE DIAGRAM

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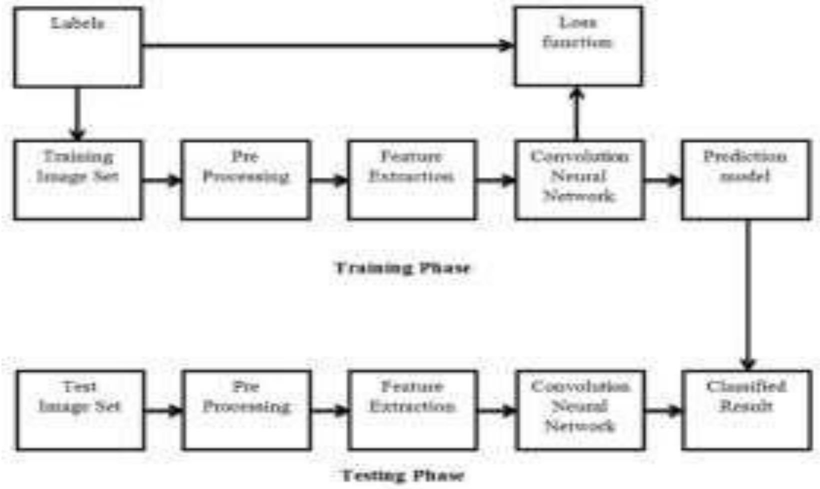

FIG 5.2 FLOW CHART DIAGRAM

VI. RESULTS AND DISCUSSION

The Following are the outputs received from our system,

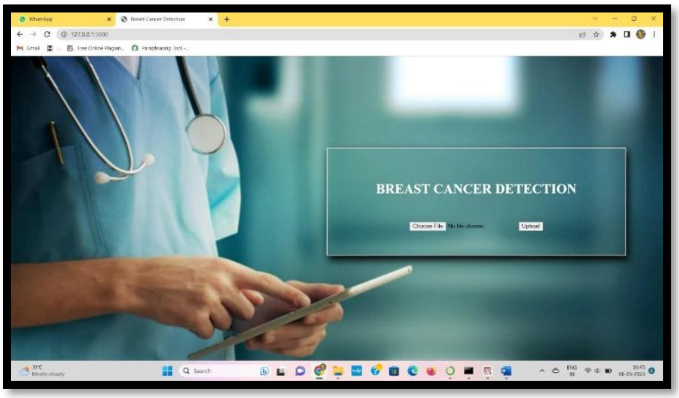

FIG 6.1 HOME PAGE

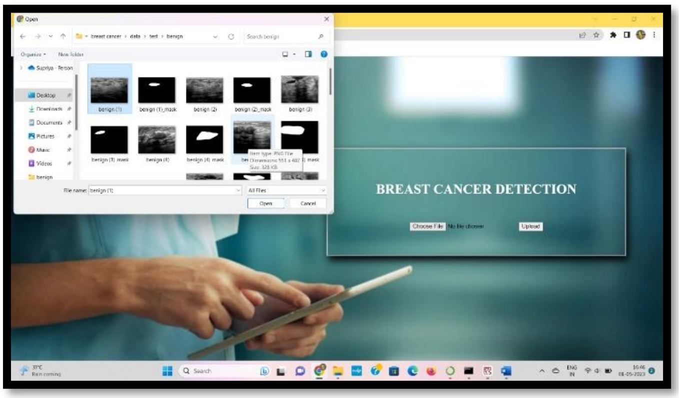

FIG 6.2 IMAGE SELECTION

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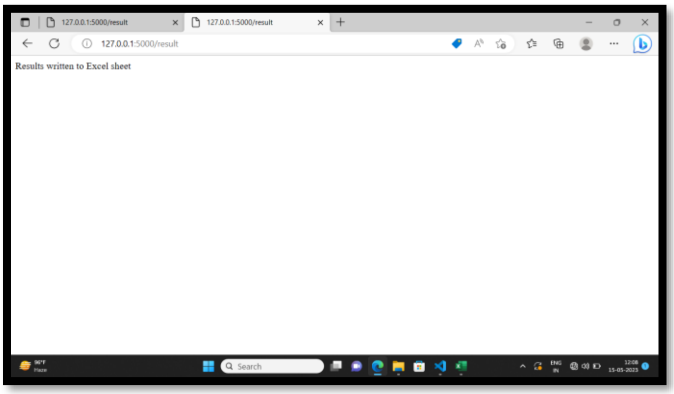

Fig 6.3 Output written to excel

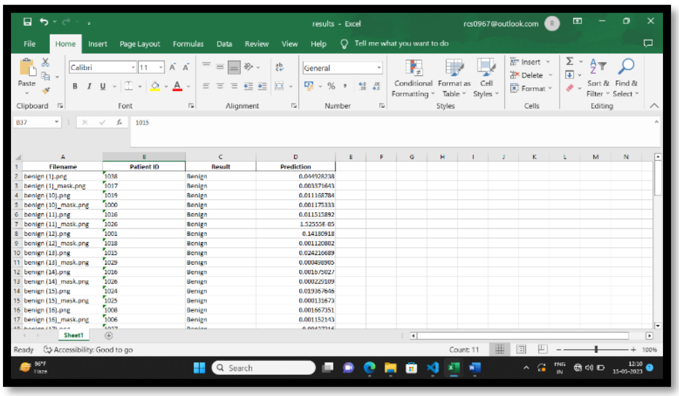

Fig 6.4 Results

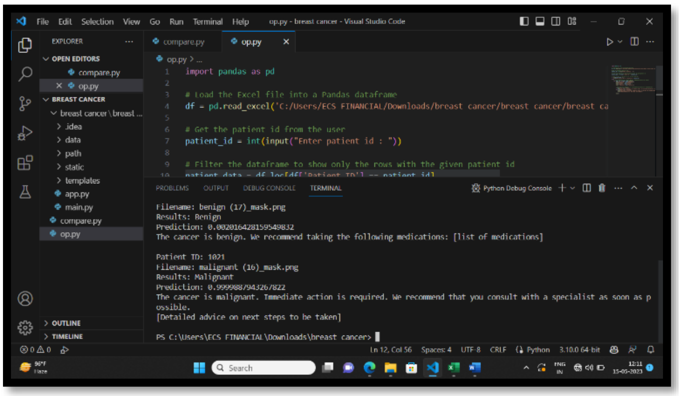

FIG 6.5 Patient Data Searching

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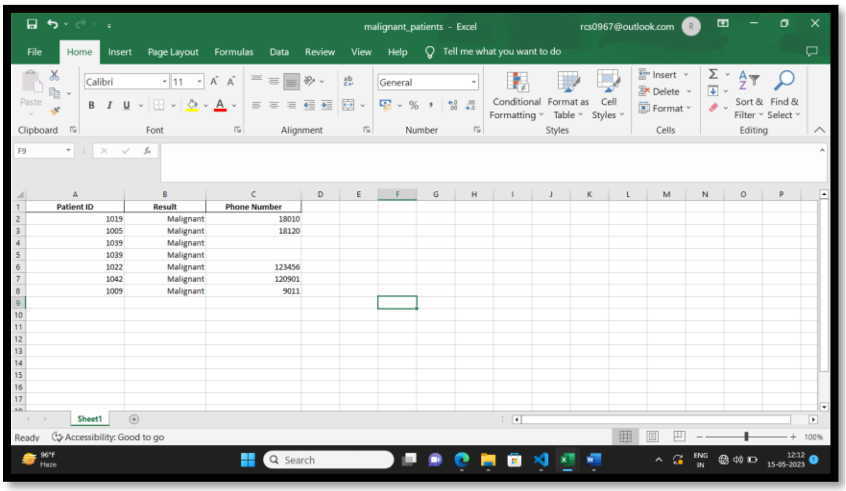

Fig 6.6 Classifying Malignant Patient and retrieving phone number

VII. CONCLUSION

Thus, the system gets an X-Ray as its input and segment the required areas using CNN and produces a result of classification into normal and abnormal of cancer. And tells whether the cancer is in which stage based on the segmentation.

VIII. FUTURE ENHANCEMENT

In Future the system can be improved in terms of efficiency and processing speed. It can also be improved to give prescribed medicines and advices automatically based on the stage of cancer. It can also be improved to directly take X-Ray system as input and give a result immediately based on the it.

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