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Detection of Lung Cancer Disease Using Deep Learning

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ABSTRACT: Cancer disease is a very frequent and important reason of any death for both women and also men. If we detect early cancer it can help to get rid of the disease totally. So we require strategies to find early detection of disease cancer which is evolving very fast. The main reason which is misunderstood disease is lung cancer. Lung cancer can be the leading and important reason of the deaths which are related to cancer worldwide. From this we can conclude that there is a very large probability of human error in treating the cancer at the early stages. Therefore, we aims to find and detect cancer early with image recognition to reduce error which are made by human and we develop the procedure more reliable, accurate and less complicated. In the proposed work, image processing algorithms were used and a neural implant network to design an automated process for the early detection of lung cancer.

KEYWORDS: Iimage processing, Artificial neural network, Kaggle Dataset, Convolution Neural Network Algorithm, Pooling Layer

I. INTRODUCTION

The manifestations of lung cancer in a patient's body present with simple symptoms in most cases. Treatment and prediction depend on the type of history of
1,242,000 men were diagnosed worldwide in 2012, which means that about 16.7% of all cancers in men are the most dangerous, while 583,000 patients diagnosed in 2012 are women, 8.8% of women and the third most dangerous. Dealing with this wild disease has been a tedious process but with the new technological advances the development of the qualifications for forgiveness and adoption has been achieved, but it is still a long and expensive process. It is also important to note that in developing countries, a large proportion of cancer patients are affected. Imagine that cancer diagnostic procedures are very expensive, making it difficult for such patients to pay for expensive consultation. Therefore, our design also aims to make the cancer screening process affordable in such a human environment where one does not have adequate access to expensive health care.

- Chronic cough or change in the usual coughing method, wheezing.
- Chest pain or abdominal pain.
- Cachexia (weight loss, fatigue, loss of appetite)

II. LITERATURE SURVEY

Lung cancer research is a region that strongly influences the motivation of the rehabilitation field. Early cancer screening can help increase mortality. This is very tedious, and their accuracy depends on the operator's ability. Cauhan et.al (2016) [1] reviewed various ways to detect lung cancer such as ANN (Artificial Neural Network), image management, LDA (Linear Dependent Analysis), SOM (Self-Determination Map) and so on. From the conclusion, it is limited to the use of vector support machines as a separating tool. Support Vector Machine (SVM) supervised learning models analyze data

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and detect patterns. Krishnaiah et.al (2013) [2] provides a framework for the discovery of various details of lung cancer through data mining techniques and strategies to effectively diagnose lung cancer. Knowledge Discovery in Databases (KDD), incorporates data mining techniques to detect and exploit cancer patterns among a large number of mutations, and predict the outcome of the disease using specific medical cases stored within the database. Tiwari et.al (2016) [3] introduced a screening process for predicting lung cancer and continuing early detection and treatment to prevent lung cancer. Predicting lung cancer Various features are drawn from the pictures in these lines, pattern-based methods are important in predicting lung cancer. Extensive research on lung cancer anticipation by a previous analyst using imaging analysis techniques has been demonstrated. Image processing techniques with computer-based techniques are helpful in predicting and making decisions about lung cancer.

III. ALGORITHM

CNN represents the Convolutional Neural Network. This algorithm is widely used for machine learning. It can be represented using a 5 * 5 cuboid with parameters such as length, width and height. CNN is an algorithm used for in-depth learning that can take an input image, give value (readable materials and selection) to the various elements / elements in the image and be able to distinguish one from the other.
Outcome analysis was done with the following formula: -

Actual value - Estimated value = Error

The agenda of this algorithm is to enable machines to view the world the way people do, see it in the same way and use knowledge to perform many tasks such as image and video recognition, image analysis and classification, complimentary programs, natural language processing and in-depth learning.

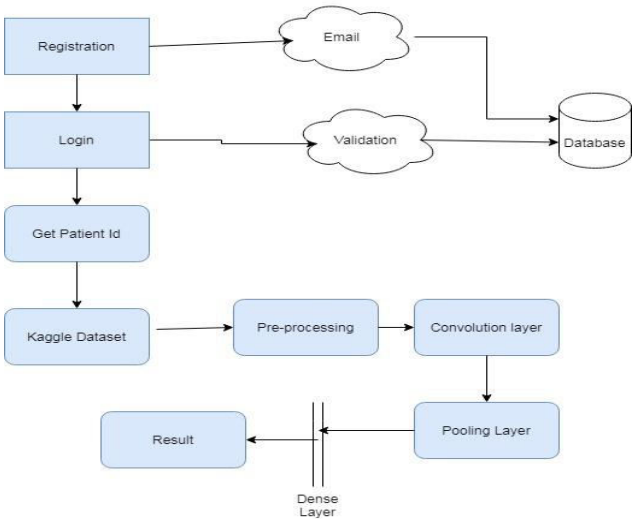

Figure 1. Architecture Diagram

IV. PROPOSED METHODOLOGY

Module 1: Preliminary processing

The sign-in and sign-up page is designed for the user to download user information. And the program provides basic information on lung cancer.
Login also finds user location using Google Maps.
The system sends the password to the user's mail after successful registration and thereafter in case the user forgets the password.

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Module 2: CNN Algorithm

This is done using a CNN algorithm that accepts images and converts them into a gray scale and gives results in the form of a binary value. 0 black and 1 white. It converts a large image into a 50-50 cube and is processed using the CNN algorithm. It divides the cube into 25 units each. It takes the first image as input and then before processing the final result is drawn after the expected release. Preliminary processing has a total value of 4 * 5 = 20 cubes of output analysis where the first is the input cable and the last is the output cube.

Module 3: Pooling Layer

This allows for proper layout of the structure. It has various parameters like top, bottom, etc. This is used to modify the clarity of the effect and to adjust the focus to print the result of the analyzed output.

V. CONCLUSION

Early detection can help to cure the disease completely. The program therefore aims to diagnose cancer early through automatic procedures to reduce human error and make the procedure more accurate and complex. In this research work, we exploit supervised learning to develop models for identifying individuals with lung cancer manifestation based on several features–symptoms.From the experiment results and after applying algorithm with 10- fold cross-validation, the RotF outperformed the other models with an accuracy, precision, recall and F-Measure equal to 97.1% and an AUC of 99.3%. Additionally, our proposed models performed with better results in comparison to the model

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