DETECTION OF LUNG CANCER
AND ITS STAGES USING
RANDOMTREE CLASSIFIER

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Abstract
A new method to detect the three different stages of lung cancer has been proposed in this work. Lung cancer is one the most serious cancers in the world. The rate of lung cancer is high when compared to other cancers. For this purpose the performance of Random Tree Classifier is used in this work which helps to identify the three different stages named initial stage, intermediate and sever and makes the job with no complexity

Key Words: Non-small-cell lung carcinoma (NSCLC) Small cell Lung Carcinoma (SCLC), computed tomography (CT).

1 Introduction
Lung malady, generally called lung carcinoma, is a debilitating lung tumor depicted by uncontrolled cell improvement in tissues of the
lung. In case left untreated, this improvement can spread past the lung by the method of metastasis into near to tissue or distinctive parts of the body. Most malignancies that start in the lung, known as basic lung maladies, are carcinomas. The two key composes are little cell lung carcinoma (SCLC) and non-little cell lung carcinoma (NSCLC). The most generally perceived signs are hacking (checking hacking up blood), weight diminishishment, shortness of breath, and chest torments. Most by a wide margin (85%) of occasions of lung threat are a result of whole deal tobacco smoking. Around 10 15% of cases occur in people who have never smoked. These cases are frequently caused by a mix of inherited parts and prologue to radon gas, asbestos, second-hand smoke, or distinctive kinds of air sullying. Lung danger may be seen on chest radiographs and figured tomography (CT) checks. The finding is certified by biopsy which is commonly performed by bronchoscopy or CT-bearing. Avoidance of danger factors, including smoking and air tainting, is the basic strategy for foresight. Treatment and whole deal comes about depend upon the sort of harm, the stage (level of spread), and the person’s general prosperity. Most cases are not reparable. Essential drugs join surgery, chemotherapy, and radiotherapy. NSCLC is now and again treated with surgery, however SCLC generally responds better to chemotherapy and radiotherapy. Worldwide in 2012, lung danger occurred in 1.8 million people and achieved 1.6 million passings. This makes it the most generally perceived explanation behind malady related going in men and second most fundamental in women after chest development. The most generally perceived age at conclusion is 70 years. Overall, 17.4% of people in the United States resolved to have lung illness survive five years after the assurance, while comes about everything considered are all the more terrible in the making scene than showed as stretched out observation opens individuals to expanded radiation.
Stage-1 Cancer

Stage-1A
Cancer up to 5cm in size

Stage-1B
Cancer up to 5cm in size

Stage-2 Cancer

Cancer is any size and there are...

Stage-3 Cancer

Cancer cells in the lymph nodes in the mediastinum

AND it is growing into one of these...
2 METHODOLOGY:

Block diagram representing the identification of lung cancer

![Block Diagram](image)

3 RESULT AND DISCUSSION

The features obtained from the above steps are taken into account for the classification of tumor. The area of each tumor is taken for the staging process. The final decision is taken by random tree classifier for tumor staging results. Random tree is a classifier used for a stochastic process. Random tree includes a collection of decision tree. The root node for the random tree is selected randomly. During training, random instances are selected from the datasets. With the selected instances the decision trees are created. These decision trees belong to different classes. During testing, classifier takes the input feature vector. This vector is taken by every tree in the forest and thus the classification process is done. The output will be class label of majority votes.
(E) Eroded Image

(F) Image Segmentation
The experiments are conducted on the lung cancer detection system (LCDS) with the inputs are CT images of lung. CT image is successfully processed by each step in lung cancer detection system and the resulted was obtained. CT image of lung is given to various image enhancement techniques and the output is obtained. Various image enhancement techniques are Gabor filter, Fast Fourier transform and log-gabor filter. The resultant enhanced images of is shown in Fig Output from image enhancement technique is used as the input to the image segmentation module. In this work output from filter is used as input. For image segmentation techniques used, that is thresholding segmentation. Resultant output from
both the method are generated and evaluated. Obtained results are shown. Identification module identifies the cancer caused part in lung and marked with red colour.

4 Conclusion

From the obtained result it is clear that Random Tree classifier provides better result in identifying the stages of lung and the time consumption is also less when compared to exisiting project like Neuro Fuzzy Classifier. This method can aslo be applied for some other cancer like breast cancer skin cancer. By improving this method by implanting different algorithm we can improve the tumor detection rate

References


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