**Synopsis**

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**Submitted By:**

**Mr.Sumit R.Verma**

Miss.Gaurija P. Dakhole Miss.Samruddhi D. Dhote

Mr.Balaji A. Bhoyar Mr**.**Somesh R. Ghaturle

Mr.Nimish P. Gaikwad

**Guided By**

**Lect. Ms . H.N. Gangavane**

**DEPARTMENT OF COMPUTER ENGINEERING**

**ACHARYA SHRIMANNARAYAN POLYTECHNIC .PIPRI, WARDHA.**

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**Abstract**

l medical areas for improving earlier detection and treatment stages, in which the time factor is very important to discover the disease in the patient as possible as fast, especially in various cancer tumors such as the lung cancer. Lung cancer has been attrcting the attention of medical and sciatic communities in the latest years because of its high prevalence allied with the difficult treatment. Statistics from 2008 indicate that lung cancer, throughout world, is the one that attacks the greatest number of people. Early detection of lung cancer is very important for successful treatment. There are few methods available to detect cancerous cells. Here two methods of segmentation such as thresholding and watershed are used to detect the cancer cell and too find out better approach out of them.

**1. INTRODUCTION**

CANCER is one of the most serious health problems in the world field. The mortality rate of lung cancer is the highest among all other types of cancer. Lung cancer is one of the most serious cancers in the world, with the smallest survival rate after the diagnosis, with a gradual increase in the number of deaths every year. Survival from lung cancer is directly related to its growth at its detection time. The earlier the detection is, the higher the chances of successful treatment are. An estimated 85% of lung Cancer cases in males and 75% in females are caused by cigarette smoking [1].

In 2013 About 1,660,290 new cancer cases are expected to be diagnosed in 2013, and in 2013 about 580,350 Americans are projected to die of cancer, almost 1,600 people a day. Cancer remains the second most common cause of death in the US, accounting for nearly 1 of every 4 deaths. The overall survival rate for all types of cancer is 63%. Although surgery, radiation therapy, and chemotherapy have been used in the treatment of lung cancer, the five year survival rate for all stages combined is only 14%. This has not changed in the past three decades [2]. Lung cancer frequently extends in the direction of the middle of the chest because the usual course of lymph out of the lungs is on the way to the centre of the chest. Metastasis happens when a malignancy cell plants the site where it begins and shifts into a lymph node or to one more part of the body in the course of the blood flow. Tumor that initiates in the lung is called crucial lung cancer. There are a number of dissimilar kinds of lung cancer, and these are separated into two major groups: Small cell lung cancer and non-small cell lung cancer. Non-small cell lung cancer has three subtypes: Carcinoma, Aden carcinoma and Squamous cell carcinomas. [3] The purpose of this paper is to find the cancerous cells present in the CT images of lung and give more accurate result by using variousenhancement and segmentation techniques such as thresholding and watershed transform.

**2**. **LITERATURE SURVEY**

Adaetal [1] (April 2013,) made an attempt to detect the lung tumors from the cancer images and supportive tool is developed to check the normal and abnormal lungs and to predict survival rate and years of an abnormal patient so that cancer patient’s lives can be saved.

Krishnaiahetal [2] (2013) developed a prototype lung cancer disease prediction system using data mining classification techniques. The most effective model to predict patients with Lung cancer disease appears to be Naïve Bayes followed by IF-THEN rule, Decision Trees and Neural Network. For Diagnosis of Lung Cancer Disease Naïve Bayes observes better results and fared better than Decision Trees.

Charles Edekietal[3](2013)Suggests that none of the data mining and statistical learning algorithms applied to breast cancer This data consists of more than 30 attributes such as Age, Marital status, Symptoms relating to cancer, occupational hazards, family history of cancer etc. These attributes are used to train and develop the system and a part is used to test the significance of the system. These attributes play an important role in diagnosing cancer in all the cases.

Prof. D. S. Patiletal [4] (2013) in medical diagnosis blood cell count plays very important role. Increment or Decrement in the count of blood cell causes many diseases to occur in the human body. There are different techniques of blood cell counting which involves conventional as automatic techniques. The conventional method of manual counting under microscope is time consuming and yields inaccurate results. Although there are hardware solutions such as the Automated Hematology Counter, developing countries are not capable of organizing such unaffordable expensive machines in every hospital laboratory in the country. As a solute this problem, to provide a software-based cost effective and an efficient alternative in recognizing and analyzing blood cells, This paper presents the preliminary study of automatic blood cell counting based on digital image processing.

Stine-Kathrein-Kraeft, LauraGravelinetal [5] (2012) an automated rare event detection system (Rare Event Imaging System) is described for the recognition of cancer cells that appear at low frequencies (1 in 1 million) in peripheral blood (PB) or bone marrow (BM). The instrumentation includes an automated fluorescence microscope (Nikon Micro hot-FXA) with a cooled charge coupled device camera and a 60-MHz Pentium personal computer. Main features of the system are rapid analysis of large microscopic fields, including a total cell scount, detection of fluorescently labeled cells, and a display of digitally stored images of the detected cells. Furthermore, the X,Y coordinates of each identified object are stored and can be recalled for morphological analysis of the cell using higher magnification or different fluorescent filter sets.

NurAlomTalukdar, Daizy Deb Sudipta Roy etal [6] (2014) Blood cancer is the most prevalent and it is very much dangerous among all type of cancers. There are many diagnostic technologies and tests to diagnose blood cancer.. The accuracy rate of the diagnosis of blood cancer by using the fuzzy system will be yield a slightly higher rate of accuracy then other traditional methods and will reduce the effort and time. The proposed method is using Wavelet Transformation for image improvement, image segmentation for segmenting the different cells of blood, edge detection for detecting the boundary, size, and shape of the cells and finally Fuzzy Inference System for Final decision of blood cancer based on the number of different cells.

**3.Motivation**

Cancer detecting cell have many tehniques now a days and they have many draw backs with those technique.Toover comethosse drawbacks this paper intrroduce over technique.Now a days the ratio of cancer day by day increases so and related to cancer various types of disease also increases to detect those cancer cells easily in limited time we can introduce our paper in our paper we try to achiveour objective and make easy to dtecting a cancer cells.

**4. Problem Definition**

* In all types of Lung Cancer Prediction System, the Ant Colony Algorithm, Neural Network Algorithm been used.
* They all has the accuracy level from 65% to 80%.
* The time and cost required for various excessive Medical Tests is more.
* The combination of the Ant Colony Algorithm, Neural Network Algorithm has not been used till the date.
* Early detection of lung cancer is challenging problem, due to structure of cancer cell which overlapped with each other .

**5. Objectives**

* To decrease the number of rules for testing.
* To reduce the time and cost required for various excessive Medical Tests.
* To increase the accuracy of performance of Lung Cancer Prediction System.
* Use less number of attributes for prediction of Cancer.
* Early stage detection of cancer.
* Increasing the survivability of the patient more than 5 years.

**6. Proposed Work**

**Workflow of the Project**



1. **Algorithm:-**

1st Step : In 1st steps create image file like as .jpg.jpeg.

2ndStep : The image is processed for Comparison.

3rd Step : Different process performs on those cells.

: 1] Size of nucleus

* On the 1st parameter the cell will check on the basic of Nucleus.

: 2] Size of cell

* On 2nd parameter the cell will on the basis size of the Cell.

: 3] Texture of nucleus

* On 3rd parameter the texture of cell will be change after affected.

: 4] Regularity of boundary

* On 4th parameter the cell will change its size shape and other things.

: 5] Darkness of the nucleus

* On 5th parameter we will check the darkness of nucleus.

4th step : This all the process perform on images than that provides

5th step : Result. The Cell Nucleus

In our proposed approach we first take an input image of blood sample. The original image is generally in the Red-Green-Blue (RGB) color space. This original image of blood sample is then converted to High Saturation Value (HSV) color space by using preprocessing stage. .RGB image to HSV image is then next followed by cell segmentation follows the separation of foreground objects from background object which is performed by watershed algorithm. Steps will be described in detail in the following section.

**6.1 System Configuration:**

**H/W System Configuration**

* 1. RAM – 256 MB onwards
  2. Hard Disk – 40 GB onwards
  3. Processor – P4 and Advanced
  4. CT Scan Machine

**S/W System Configuration**

* 1. MATLAB
  2. JAVA
  3. MySQL

**7.Project Management: Estimated Plan**

**Activity chart**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sr no. | Activity/Month | June | July | Aug. | Sep. | Oct. | Nov. | Dec. | Jan | Feb |
| 1. | **Analysis** |  |  |  |  |  |  |  |  |  |
| 2. | **Planning** |  |  |  |  |  |  |  |  |  |
| 3. | **Design** |  |  |  |  |  |  |  |  |  |
| 4. | **Coding** |  |  |  |  |  |  |  |  |  |
| 5. | **Testing** |  |  |  |  |  |  |  |  |  |

**Conclusion**

Lung cancer is the most dangerous and widespread in the world according to stage the discovery of the cancer cells in the lungs, this gives us the indication that the process of detection this disease plays a very important and essential role to avoid serious stages and to reduce its percentage distribution in the world. To obtain more accurate results three stages used: Image Enhancement stage, Image Segmentation stage and Features Extraction stage. Marker- Controlled Watershed Segmentation approach has more accuracy (85.27%) and quality than Thresholding approach (81.24%).

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