A LUNG CANCER AREA PREDICTION APPROACH WITH TOTAL DEATHS WORLDWIDE CAUSED BY CANCER EACH YEAR PREDICTION OF LUNG CANCER IMAGES USINGPARALLEL SALIENCY ALGORITHM

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ABSTRACT

To design prediction of the lung cancer from the body is depending on the lung cancer images and parallel saliency algorithm. Lung cancer images with parallel saliency algorithm for predict the lung cancer and produce the parallel saliency map. To solving the medical issues as well as reducing the work for doctors by using parallel saliency algorithm. Parallel Saliency algorithm able to predicts the specific part of the lung cancer by using image of lung cancer. The objective of applying parallel saliency algorithm over cancer images to predict the most affected phase of the lung cancer, second parallel saliency algorithm works in multi-core environment so compare to exiting saliency algorithm parallel saliency algorithm provides more performance to the researchers and scientist.

Keyword: Parallel Saliency, Lung Cancer Images.

I. INTRODUCTION

To design prediction of the lung cancer from the body is depending on the lung cancer images and parallel saliency algorithm. Lung cancer images with parallel saliency algorithm for predict the lung cancer and produce the parallel saliency map. Behind proposed work is combining multiple techniques and producing a new research for image processing researchers and animators. In the proposed work is combining multiple techniques and producing the new algorithm with the help of lung cancer images as well as parallel saliency algorithm. On the particular wall more objects are there so separation of the objects are major issue through the human eyes very easy to find the difference between foreground and background but using software and machine could be difficult. To solving lungcancer separation object problems from the images by using parallel saliency algorithm in the terms of efficient performance. Apart from leukemia all modules image results apply on the parallel saliency algorithm for finding the area of lungcancer and stage of the lung cancer whatever it might be.

Lung cancer is the uncontrolled growth of abnormal cells that start off in one or both lungs; usually in the cells that line the air passages. The abnormal cells do not develop into healthy lung tissue; they divide rapidly and form tumors. As tumors become larger and more numerous, they undermine the lung's ability to provide the bloodstream with oxygen. Tumors that remain in one place and do not appear to spread are known as "benign tumors".

Malignant tumors, the more dangerous ones, spread to other parts of the body either through the bloodstream or the lymphatic system. Metastasis refers to cancer spreading beyond its site of origin to other parts of the body. When cancer spreads it is much harder to treat successfully.

Primary lung cancer originates in the lungs, while secondary lung cancer starts somewhere else in the body, metastasizes, and reaches the lungs. They are considered different types of cancers and are not treated in the same way.

According to the National Cancer Institute, by the end of 2012 there will have been 226,160 new lung cancer diagnoses and 160,340 lung-cancer related deaths in the USA.

According to the World Health Organization (WHO), 7.6 million deaths globally each year are caused by cancer; cancer represents 13% of all global deaths. As seen below, lung cancer is by far the number one cancer killer.

Total deaths worldwide caused by cancer each year:

- **Lung cancer** - 1,370,000 deaths
- **Stomach cancer** - 736,000 deaths
- **Liver cancer** - 695,000 deaths
- **Colorectal cancer** - 608,000 deaths
- **Breast cancer** - 458,000 deaths
- **Cervical cancer** - 275,000 deaths

The American Cancer Society says that lung cancer makes up 14% of all newly diagnosed cancers in the USA today. It adds that annually, more patients die from lung cancer alone than prostate, breast and colon cancers combined (in the USA). An American man's lifetime risk of developing lung cancer is 1 in 13; for a woman the risk is 1 in 16. These risk figures are for all US adults, including smokers, ex-smokers and non-smokers. The risk for a regular smoker is dramatically higher.

Most lung cancer patients are over the age of 60 years when they are diagnosed. Lung cancer takes several years to reach a level where symptoms are felt and the sufferer decides to seek medical help.

Female lung cancer rates set to rise rapidly

Over the next three decades, female lung cancers will increase thirty-five times faster than male lung cancers, scientists from King's College London reported in October 2012.

In the UK, female lung cancer deaths will reach 95,000 annually in 2040, from 26,000 in 2010 – a rise of more than 350%. Male annual lung cancer deaths will increase by 8% over the same period, to 42,000 in 2040 from 39,000 in 2010.

The authors of the report say that lung cancer will continue being the largest cancer killer over the next thirty years. Twice as many people will be living with lung cancer in 2040 compared to 2010. The main reason for the increase will be longer lifespans - the older you are, the higher your risk of cancer is, including lung cancer.

1.1 How Is Lung Cancer Classified?

Lung cancer can be broadly classified into two main types based on the cancer's appearance under a microscope: non-small cell lung cancer and small cell lung cancer. Non-small cell lung cancer (NSCLC) accounts for 80% of lung cancers, while small cell lung cancer accounts for the remaining 20%.

NSCLC can be further divided into four different types, each with different treatment options:

Squamous cell carcinoma or epidermoid carcinoma. As the most common type of NSCLC and the most common type of lung cancer in men, squamous cell carcinoma forms in the lining of the bronchial tubes.

Aden carcinoma. As the most common type of lung cancer in women and in nonsmokers, adenocarcinoma forms in the mucus-producing glands of the lungs. Bronchi alveolar carcinoma. This type of lung cancer is a rare type of adenocarcinoma that forms near the lungs' air sacs. Large-cell undifferentiated carcinoma. A rapidly growing cancer, large-cell undifferentiated carcinomas form near the outer edges or surface of the lungs. Small cell lung cancer (SCLC) is characterized by small cells that multiply quickly and form large tumors that travel throughout the body. Almost all cases of SCLC are due to smoking.

1.2 What Causes Cancer?

Cancer is ultimately the result of cells that uncontrollably grow and do not die. Normal cells in the body follow an orderly path of growth, division, and death. Programmed cell death is called apoptosis, and when this process breaks down, cancer begins to form. Unlike regular cells, cancer cells do not experience programmatic death and instead continue to grow and divide. This leads to a mass of abnormal cells that grows out of control. Lung cancer occurs when a lung cell's gene mutation makes the cell unable to correct DNA damage and unable to commit suicide. Mutations can occur for a variety of reasons. Most lung cancers are the result of inhaling carcinogenic substances.

1.3 Carcinogens

Carcinogens are a class of substances that are directly responsible for damaging DNA, promoting or aiding cancer. Tobacco, asbestos, arsenic, radiation such as gamma and x-rays, the sun, and compounds in car exhaust fumes are all examples of carcinogens. When our bodies are exposed to carcinogens, free radicals are formed that try to steal electrons from other molecules in the body. These free radicals damage cells and affect their ability to function and divide normally. About 87% of lung cancers are related to smoking and inhaling the carcinogens in tobacco smoke. Even exposure to second-hand smoke can damage cells so that cancer forms.

1.4 Genes

Cancer can be the result of a genetic predisposition that is inherited from family members. It is possible to be born with certain genetic mutations or a fault in a gene that makes one statistically more likely to develop cancer later in life. Genetic predispositions are thought to either directly cause lung cancer or greatly increase one's chances of developing lung cancer from exposure to certain environmental factors.

II. RELATED WORK

The aim this paper to solve the medial problems and produce the new research scenario for solving Lung cancer problems. Parallel saliency algorithm is the best solution for separation of lung cancer area from the main image. Parallel saliency algorithm is much better than exiting saliency algorithm in terms of performance. Parallel saliency algorithm implemented with the help of image signature as well as channel map for producing

a saliency map. Image signature, within the region of signal mixing helps in approximating the foreground of an image. Then it is studied through various experiments whether this approximate foreground overlaps with locations, which are visually conspicuous. Parallel saliency algorithm playing the major role for image processing researches for developing new algorithms using saliency map, improving exiting algorithms using saliency mapping concept in parallel environment approach. In this paper lung cancer image concepts and the results are retrieved from one by one image parallel saliency algorithm, which is finally produces a saliency map.

III. METHODOLOGIES

3.1 Parallel Saliency Algorithm

The proposed research work based on parallel saliency algorithm with image transformation technique with the help of image descriptor for finding the saliency map using image transformation. As well as various experiments we are focusing on parallel saliency algorithm. The separation of the objects from whole the wall that is refers to as FGS which is stands for Figure Ground Separation. Thus the propose work is making parallel saliency algorithm applying on image transformation for finding the saliency map using different modules like input image , RGB colour , channel map and saliency map using image descriptor. According to Parallel Saliency Algorithm where splitting the colour image into constituent channels then combing the output into saliency map. All the channel maps of parallel saliency obtained by transforming the channel to the DCTD that is Discrete Cosine Transform domain and takes signs all values in this domain for reconstructing the signs in the image domain for reconstructing the signs squaring each value, image domain and smoothing by convolution with a Gaussian-kernel. It is possible to parallelize the proposed algorithm even further by parallelizing the computation of the IDCT, DCT, convolution sign and squaring functions. This can be done by distributing the computation of each matrix across different cores. K-means Cluster algorithm using image transformation results applying on parallel saliency algorithm for finding the saliency map for each modules. The memory usage is also lesser as it uses only more one of the core to execute, other cores also work.

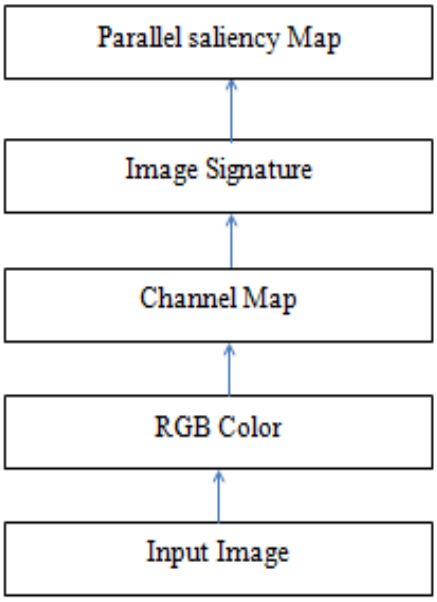


Figure 1: Architecture of Parallel Saliency Algorithm

3.2 Lung Cancer Images

Lung cancer is the uncontrolled growth of abnormal cells that start off in one or both lungs; usually in the cells that line the air passages. The abnormal cells do not develop into healthy lung tissue; they divide rapidly and form tumors. As tumors become larger and more numerous, they undermine the lung's ability to provide the bloodstream with oxygen. Tumors that remain in one place and do not appear to spread are known as "benign tumors".

3.3 Parallel Saliency Algorithm Using Lung Images

Parallel saliency algorithm able separate from foreground to background objects by using parallel saliency environment. The region behind that to separates lung cancer phase from the main image of the lung cancer image.

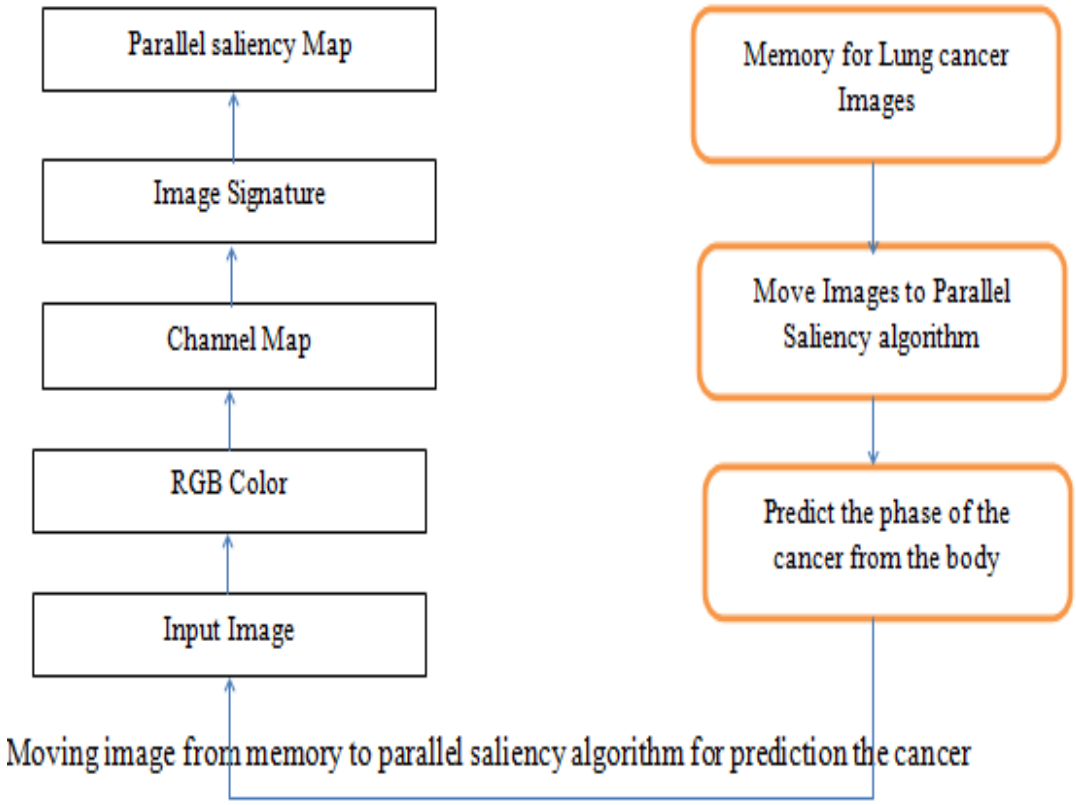


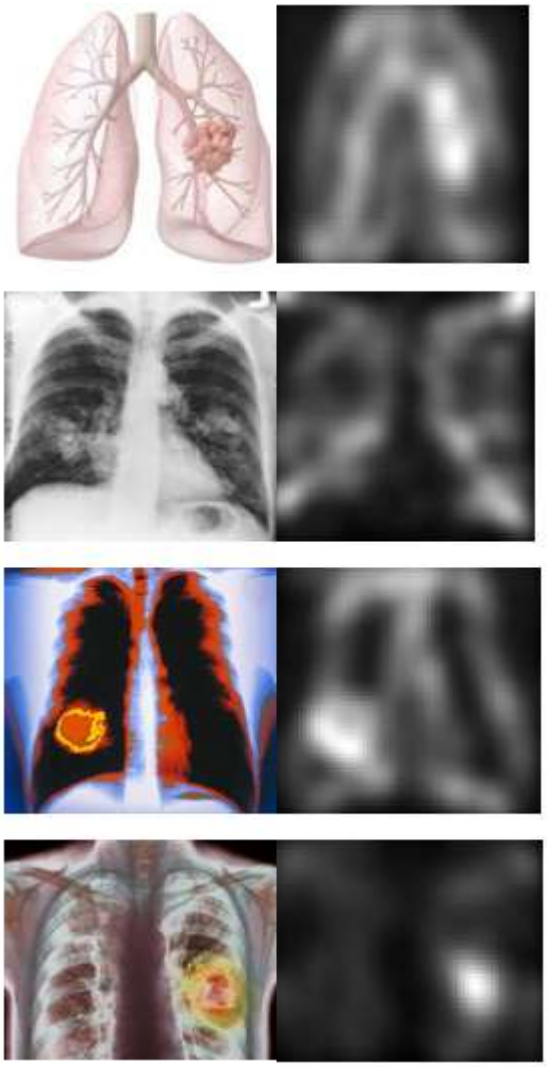
Figure2: Proposed Method for Lung Cancer Prediction Using Parallel Saliency Algorithm

IV. CONCLUSION

The parallel saliency map algorithm could be applicable for other algorithm also. For merging algorithm and producing new research using parallel saliency map which gives satisfactory performance compare to exiting saliency algorithm. The prediction the lung cancer will be helpful for researchers, students and scientist those who are involved in medical image processing and health & research and development.

V. RESULT ANALYSIS

Input Images Parallel Saliency Map



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