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Covid 19- Lung Infection Detection and Treatment Recommendation System using CT Image

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Abstract — *Past few years, entire worlds are suffering from the most deadly disease called Covid-19. This disease has become so viral that there were millions of death and still it's increasing in India. Most of the people who get impacted by the disease may face the issue like mild to moderate respiratory illness and recover without taking special treatment. And people like senior citizens with medical issues like diabetes, chronic respiratory disease, etc are more likely to develop serious illnesses. In most cases, it has been found that COvid-19 infection is been identify through having a CT Scan of the lungs. In most cases, Covid-19 patients lose their life due to multi-organ failure. So it's very necessary to identify Covid-19 impact at a very early stage where we can minimize the risk of death. Hence he has developed a system that accepts the computed tomography (CT) Image of lungs as input. Performs various segmentation. Our system analyzes the CT image of the lung and detects the infected part of the lung along with the percentage of the affected part. The system identifies the Inflection severity and will help patients to take essential measures. And our result is majorly accurate in terms of identifying Covi-19 infection.*

Keywords: Covid-19, Corona Virus, CT Images

I. INTRODUCTION

As the entire world is going through a huge pandemic i.e. corona disease (Covid-19). It usually spread through the virus and not by bacteria. This technical term of the virus is called Coronovididae. This virus has caused severe human loss and millions of humans are been affected by it, and still, the number is going on to increase. Even it had forced many countries to have a strict lockdown and it also leads to huge financial losses and India is still having millions of population getting affected every day. Lockdown was done to prevent the spread of infection from one person to another, to avoid the contact of persons. In the research, it is been found that Covid-19 affects the lungs at very early stage. So in order to reduce the death of humans and to identify the Covid-19 at its early stage, we are proposing the system. Our system will take the CT image as an input and will analyze and predict if a user is affected by the virus.

II. LITERATURE SURVEY

1. STATISTICAL ANALYSIS OF LUNG CT IMAGES FOR GROUND GLASS DIAGNOSIS

Author: Dr Punal.M.Arabi; Nanditha Krishna; Vamsha Deepa.N3

Description:

This paper presents a novel method for GLCM using the statistical features with a gray level co-occurrence matrix. These features are used to differentiate between the normal and abnormal lungs using the textural patterns in lung images. The

results obtained from this method are more promising one. It supports multi-resolution, fully-convolution neural network architecture F-Net, for the segmentation of body parts in a challenging dataset.

2. A Review Paper for Detection of COVID-19 from Medical Images and/ or Symptoms of Patient using Machine Learning Approaches

Author: Akshay Kumar, Ashok Kumar

Description:
In this paper, they have proposed how the use of X-ray, CT scans can be used to identify the confirmed Covid-19 infection. Early diagnostic of disease can help the human to get recovered early without major risk of severity and death. Early evaluation of infection can help patients to take various medical facilities.

3. Prior-Attention Residual Learning for More Discriminative COVID-19 Screening in CT Images

Author: Jun Wang, Yiming Bao, Hu Luo

Description:
This paper proposes the idea for fast Covid-19 screening through a 3D chest CT image. Their solution will efficiently predict the CT image has the symptoms of pneumonia and parallel identifies the pneumonia types between Covid-19 and disease caused by another virus. The proposed system has significantly improved the performance screening.

III. PROPOSED SYSTEM

Our implemented system will have an admin module, through which a CT image will be uploaded. The further system will analyze the uploaded image and will perform various activities which include Pre-processing, segmentation, feature extractions, classification, etc so that it will give us the perfect outcome. The system will provide the alert & also advice such that he has to take emergency treatment, or just to have home quarantine, etc. So far there is no system implemented that analyzes the CT image, and based on the results obtained, provide alert and necessary actions can be taken. CT image provided to the system should be of High resolution and clear enough. The system will be capable to identify the severity of Covid-19. The system will analyze one image at a time

IV. SYSTEM OUTCOME

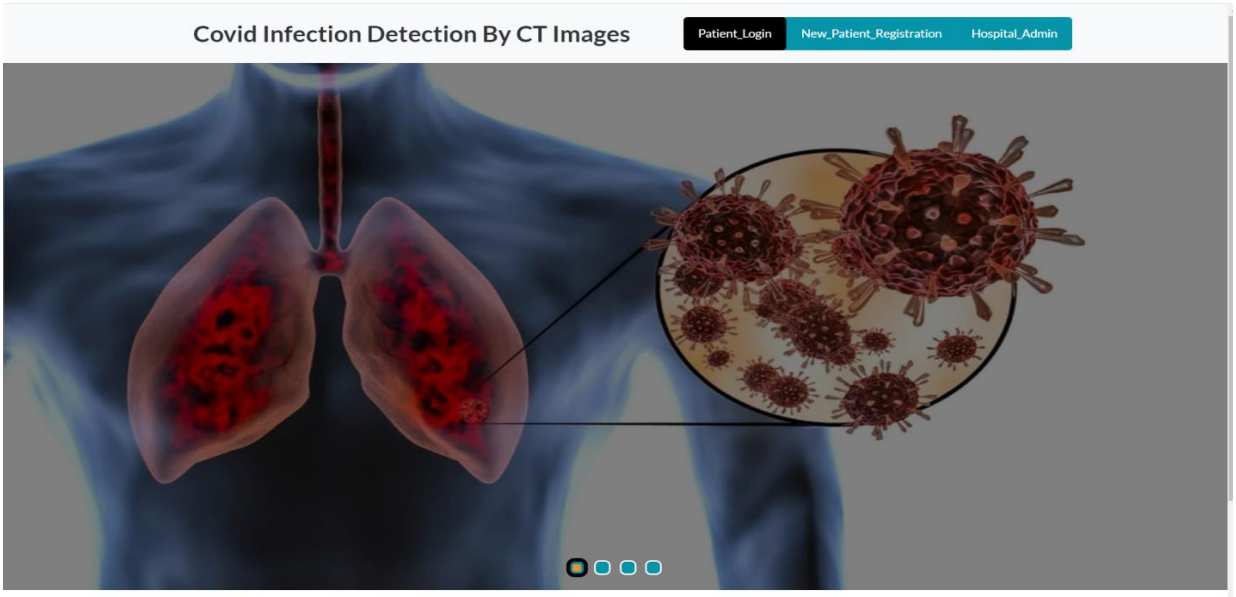

Fig: Home Page

System home page, where in we have option for patients login, new patients registration and hospital admin

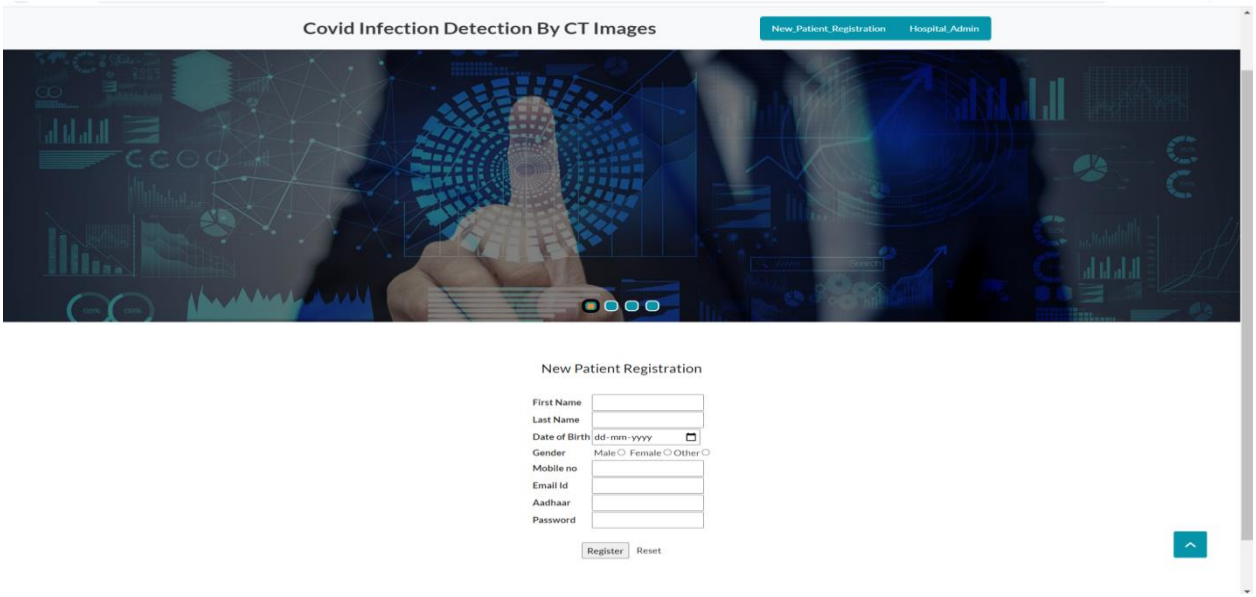

Fig: New Patient Registration Page

Patients who are the first time user can get themselves registers to system through this page

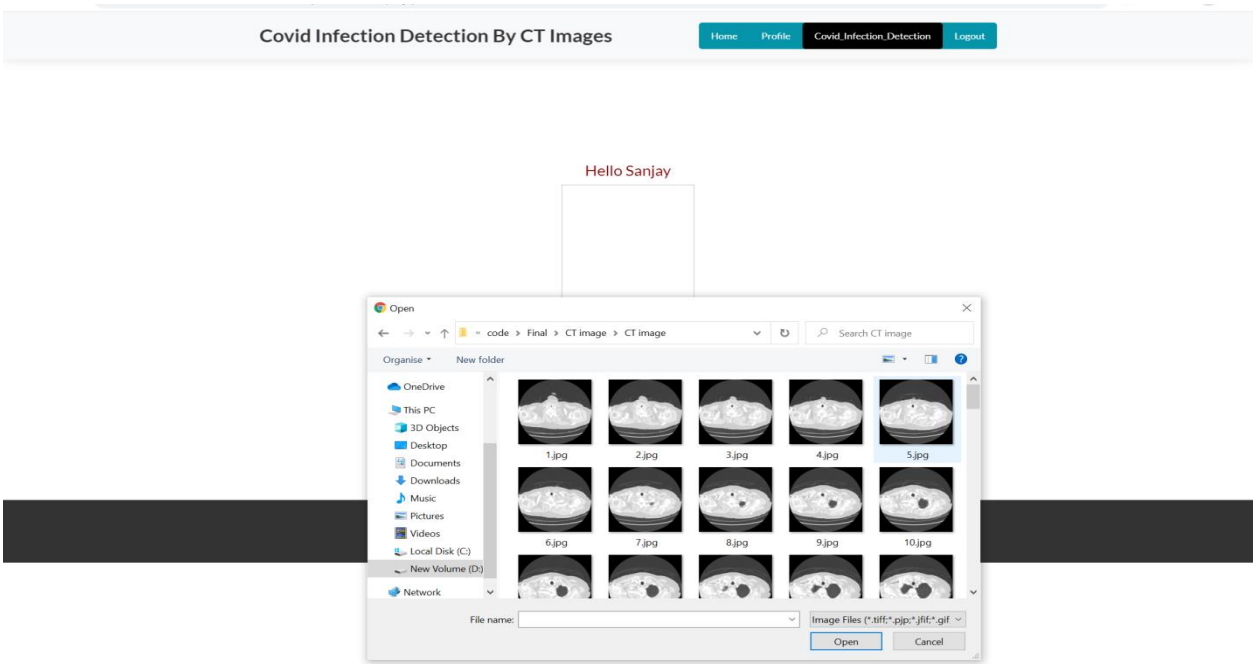

Fig: Upload CT Scan Image

The person who wants to check whether is infected by covid-19 disease can upload the CT scan image here

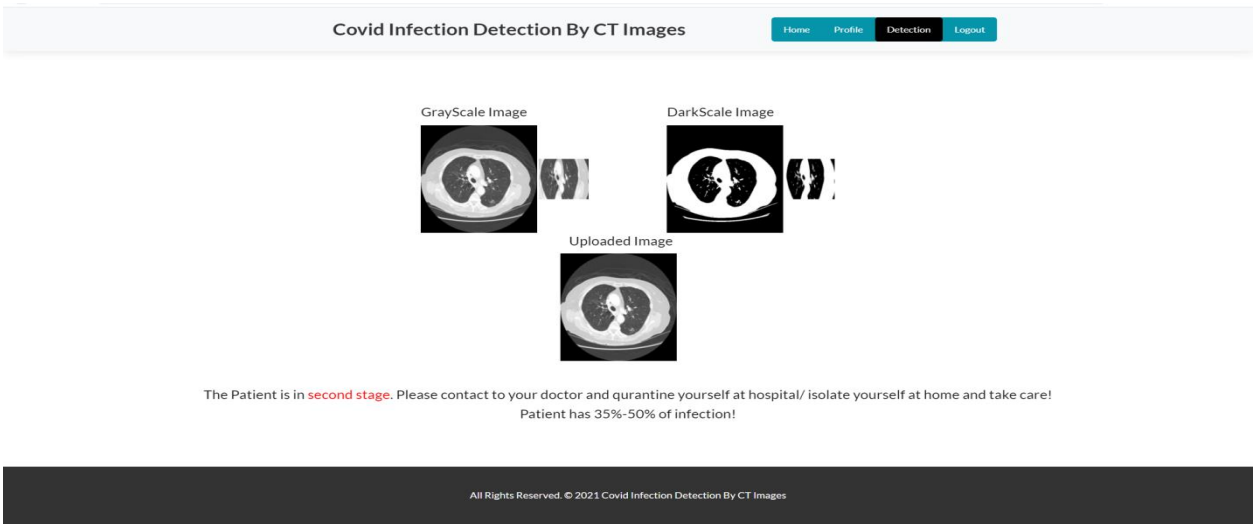

Fig: Result and recommendation to patient

Here is the final outcome of our system, wherein we will get the result based on the CT scan image uploaded, in backed system will performs various segmentation and generate the result

V. APPLICATIONS

System is specially built home users and it may be used by hospitals

VI. CONCLUSION

Our system plays a very crucial role as it helps in identifying the Covid-19 very early stage. It has a module for uploading the CT scan image. The further system will analyze the uploaded image and will perform various activities which include Pre-processing, segmentation, feature extractions, classification, etc so that it will give us the perfect outcome. The system provides the alert & also advice such that he has to take emergency treatment, or just to have home quarantine, etc. So far there is no system implemented that analyzes the CT image, and based on the results obtained, provide alert and necessary actions can be taken. The system has a simple and user-friendly interface that will help users to adapt the features and functionality quickly.

I. REFERENCES

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