**Lung Lesion Localization of COVID-19 from Chest CT Image**

**Alternate Title:** Covid-19 Detection Using CT Images By Using Convolutional Neural

Network

**Aim**:

 To detect the COVID-19 using CT images by using Convolutional neural network

**Abstract:**

The Corona-virus 2019(COVID-19), which first occurs in Wuhan city of China in December 2019, spread quickly around the world and became a plague. Due to the regular increase in cases, the number of COVID-19 test kits available in the hospital is minimal. Since an automated detection system is needed as an alternative diagnosis to prevent COVID-19 from spreading among people. It is necessary to detect the positive cases as early as possible so as to prevent the further spread of this disease. Application of Convolutional neural networks (CNN) techniques coupled with medical imaging can be helpful for the accurate detection of this disease. In this project a new model for automated COVID-19 detection using raw CT images is used. We introduced Convolutional layers and implemented different filtering on each layer.

**Existing System:**

 In Existing system, they use several types of test like swab test, nasal aspirate and sputum test. These methods are old one and it takes more number of processes and takes one or two days to predict the Covid-19 results. In Emergency situation, this process are little slow to predict. So we move to the Proposed System.

**Proposed System:**

The Covid-19 pandemic has consumed the world, with 192 countries affected and global cases nearing 150 million. To overcome the fallback in the existing system we propose a Deep learning based system to increase the speed and accuracy. We have proposed an automatic prediction of Covid-19 using a Convolutional neural networks and CT images. CT is the best tool for the detection of covid-19.

**Modules:**

* Data Collection
* Convolution Neural network algorithm
* Prediction

**Data Collection:**

 Data were drawn from a dataset provided via Kaggle. It consists of number of CT images like Covid-19 Positive and Negative CT images. Collected a dataset from Kaggle, which has not only the Chest CT scans that were Covid-19 affected but also normal scans. The aim of the dataset was to investigate various ways of effectively detecting Covid-19 virus infections.

**Convolutional Neural Network:**

 Convolution neural network is a subset of deep learning neural network. It is mainly used for image classification and image analysis. The goal behind CNN is to mimic how human brain analyzes the image. Convolution neural network is comprised of one or more Convolutional layers and then followed by one or more fully connected layers. The CNN consist of input, hidden and output layer. The input layer is basically consists of arrays of pixels. The hidden layer is the most important layer as it plays the main role in image computation. Hidden layer comprises of activation functions and biases. The output layer helps us to determine the class score. The benefit of CNN’s is that they are easier to train with providing high accuracies.

**Prediction:**

Preprocessed data are trained by DL algorithm and input given by the user, goes to the trained dataset. After prediction the predict value Shown as a whether the person affected by covid-19 or not. And user gets report via mail.

**Software Requirements:**

* Operating System : Windows 10 (64 bit)
* Software : Python 3.7
* Tools : Anaconda (Jupyter Note Book IDE)

**Hardware Requirements:**

* Hard Disk : 500GB and Above
* RAM : 4GB and Above
* Processor : I3 and Above

**Architecture Diagram:**

CT Images

Dataset Collection

Preprocessing

Convolutional Neural Network

Model

Creation

Covid-19 Detection

User

Positive

Negative

Mail