CORONA VIRUS DETECTION BY CT-IMAGES

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*ABSTRACT:*The Corona virus detection by CT images is used with deep learning algorithm.Deep learning provides the expertise and services of the project .Corona virus or COVID 19 is began in China it causes for the respiratory illness and death .Coronavirus is firstly reported at Wuhan, China on December 2019 .More than 159000000 people are infected by Corona around the world .Over 3300000 people have died because of this virus .For the large number of suspected cases quarantine and treatment is the solution for the virus. Now RT-PCR and antigen tests are available for detecting the Corona virus .But these are the slow procedure for people.In this project we can detect the corona virus by using the CT images of human due to this easily detect the virus and suddenly goes to the quarantine band treatment.COVID 19 detected by the radio graphical changes in CT images saving critical time for disease control.

INDEX TERMS: COVID 19,CT images , Artificial intelligence and Deep Learning,Black fungus,Molecular test,Antigen test,Antibody test

I INTRODUCTION

The outbreak of the Corona virus is person to person transmission of viruses first reported in China in December 2019 .The infection of the Coronavirus will moderate respiratory illness.The older people and the people with medical problems like diabetes, cardio disease ,chronic respiratory disease are more to develop serious illness or death.

The world need to recover from the COVID 19 by the better treatment and quarantine .Coronavirus causes the illness such as, severe acute respiratory syndrome (SARS), middle East respiratory syndrome (MEMS) and common cold .COVID 19 affected by both humans and animals .The symptoms for the Coronavirus are fever,cough,shortness of breath , headache etc.. There is different specific symptoms is first three COVID 19 spreads between the contact with anyone.There is different tests for detecting the Corona virus are swab test,nasal aspirate,tracheal aspirate,sputum test and blood test .Rapid diagnostic test (RDT) and antigen tests are mainly used these involves take the samples from the nose , throat and lungs .

Using deep learning algorithm can identifies the Corona virus infection by uses the CT images.it shows the radiographical changes uses for the detection .By deep learning algorithm each patient computed the tomography scan and can selected the ROI randomly uses the inception network to extracts the virus fractures and the result makes an prediction.It is very easy and efficient mechanism for identifying Corona virus infection.It is a efficient method and suddenly gets the results of the patient and

help to go for the self quarantine or other treatments.CT images can recorded by video camera and it order to reduce the computation complexity and signs for characteristics of pneumonia were extracted from CT images .The result prediction after from CT images .The result prediction after generating the fractures from the CT images.

THE COMMOM SYMPTOMS FOR THE COVID 19
- Cough
- Tiredness
- Fever

THE LESS COMMON SYMPTOMS FIR COVID 19
- Sore throat
- Headache
- Loss of smell and taste
- Rash of skin
- Aches and pains

SERIOUS SYMPTOMS
- Difficult to breath
- Chest pain and pressure
- Loss of movement

People with mild symptoms if they are healthy should manage their symptoms at home.it takes 5 to 6 days for symptoms to show however it can take up to 14 days.

II METHODOLOGY

COVID 19 is a infectious disease that spread at in the global community for the last several months .The availability of the large amount of labelled data about the virus disease diagnosis, prognosis and the prediction is a challenging task for the global community.There are large amount of the studies about the Coronavirus detection is published but that methods do not have the adequate validation and procedure testing datas. Because this project using deep learning mechanism gives a result of prediction for the COVID 19 infection.Using CT images by deep learning mechanism gives the perfect prediction .The prediction is derived from the variations on the radiographic structure of CT image.Due to this suddenly goes for the self quarantine.

The detection of COVID 19 patterns in CT images,namely the proposed system along with cross dataset analysis. Proposed model presents comparable results of highest accuracy to date on both datasets.

BLACK FUNGUS

Black fungus is a infection that related to Corona. Mucormycosis is also known as black fungus.there are some cases are reported for this black fungal infection related to Corona virus.it attacks inside the ears,nose,eyes and throat. The diabetes patients emerged from the corona , immediately after which they have been caught by this black fungal infection.

SYMPTOMS:
 Excessive runny nose
Swelling and pain your eyes
Eyelid loss and blurred vision
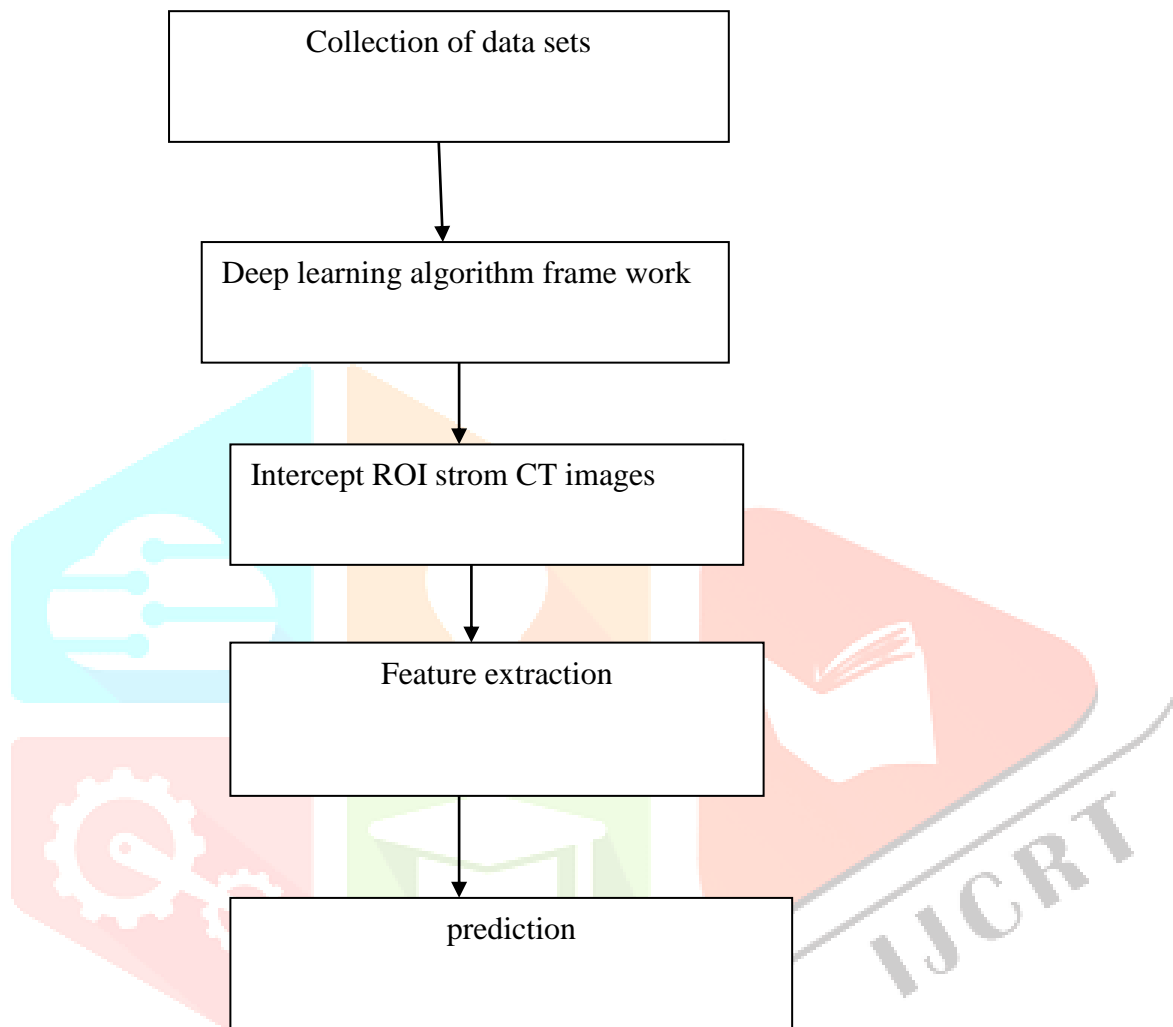Dark spots around the nose.

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│  Deep learning algorithm frame work │
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│    Intercept ROI strom CT images │
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│         Feature extraction       │
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Fig2.1:Method for corona virus detection by CT images

III   Existing System For Testing CORONA VIRUS

Now for the detection of the Coronavirus there are many different testing techniques.COVID 19 tests test the current and past infections.Viral test and antibody testing are main procedures.The viral test shows the current infection it includes the nucleic acid amplification tests and antigen tests.The antibody test shows the past infection it also known as serology test .

Molecular test or an antigen test is about the current infection. It uses real time polymerase chain reaction (RT-PCR) test.it also called nucleic acid amplification test.This test takes the sample from the back of the throat and nose .both using a long cotton swab.RT-PCR is a professional collection of samples and send to lab then analysing the virus's genetic material in the sample.The COVID 19 diagnosis confirmation identifies two specific SARS-CoV- 2genes.It is one shows an inconclusive result.

Antigen test detecting the proteins produced by virus .It is also known as lateral flow test.The antigen test is used at home by using a pregnancy test card.It produces two lines the corona virus is positive otherwise it is negative.

Serology tests are detecting antibodies .It requires a blood sample.The antibodies are present in blood and tissues .The serological test is testing the blood sample and shows negative or positive results.

1. Swab test : Take a sample from nose and throat for test
2. Nasal aspirate : The virus infected to nose and takes a sample with light suction
3. Tracheal aspirate : It is also known as bronchoscope from lungs collecting the samples.
4. Blood test : Take a sample from vein and test
5. Sputum test : The sample taken from the nose accumulates in the lungs and comes out with a cough.

Corona virus precaution

- Basic hand hygiene like washing hands with soap and water
- Cover mouth when sneezing and coughing
- Avoid unprotected contact with others

IV PROPOSED SYSTEM

CORONAVIRUS DETECTION USING CT- IMAGES :

This project works by CT images uses to detect the Coronavirus.The proposed method generating lung mask by segmenting the world of the lung ,after removing isolated high intensity areas from the encircling ribs with the input CT image by employing an optimal segmentation algorithm and morphological operations.Then detect the areas of infected lungs .After that distinguish between the infected and non infected areas of lungs .The COVID 19 is examined by two board certified radiologist .The COVID 19 lungs infections are including the presence of ground glass opacities,presence of air bronchogram,interlobular septal thickening,presence of fibrotic lesions ,centri- lobular nodules and pleural effusion etc..CT images means computer tomography .Proposed methodology for COVID 19 screening on CT scans based.

V COMPARISON

Chest CT scanning in COVID 19 patients are associated pneumonia usually shows ground- glass opacification and with consolidation. Some studies have reported that the chest CT scans are usually bilateral. It involves the lower lobs and peripheral distribution.

The CT scanning of COVID 19 patients with CT abnormalities and positive RT -PCR results for COVID 19.

- Peripheral distribution
- Ground glass capacity
- Fine reticular opacity
- Vascular thickening

The other Corona virus detection methods are swab test ,nasal aspirate , tracheal aspirate, blood test , and sputum test. The most test features are molecular test, antigen test and antibody test.

MOLECULAR TEST:

The molecular test is additionally referred to as diagnosis test,viral test , macromolecule amplification test, RT-PCR test and lamp test. The sample is taken by nasal swabs either shallow or deep and saliva. This kind of testing is extremely accurate and frequently doesn't have to be repeated . It cannot show if you ever had COVID 19 or past infection.

ANTIGEN TEST:

Antigen test is additionally referred to as rapid test. The samples are taken by nasal or nasopharyngeal swab. The positive results are usually accurate but false positives can happen. Negative results might have to be confirmed with a molecular test. It's going to not detect an early COVID 19 infection.

ANTIBODY TEST:

Antibody test is additionally called serology test and biopsy . It takes blood sample from a finger stick or vein . It's not accurate results .some times a second antibody test is required for accurate result.
There is an testing method pooled sample testing that tests several samples together.

VI COMPUTED TOMOGRAPHY

Computed tomography means CT images. It's computerized X ray imaging procedure. On every occasion the X ray source completes one full rotation. CT scans are uses for identifies the disease or injury with various regions of the body. It's screening tool that detecting the possible tumors within the abdomen.

VII IMPORTANCE OF CT IMAGES

Along with laboratory testing CT scans are helpful to diagnose COVID 19 with a high clinical suspicion of infection. CT scans expose patients to a coffee dose of radiation and it help to disease control and prevention . The chest CT scans can found 97% of COVID 19 infections. The chest CT scans may leed to both false positive and false negative results. Chest CT is detect alternative diagnoses and complications of COVID 19.

VIII DEEP LEARNING

Deep learning could be a computer science that's the subset of machine learning.The network capable for learning unsupervised from data is unlabeled.This is always known as deep neural learning.The deep learning helps to detect fraud or money laundering or other functions.Deep learning is used across all industries for number of different tasks.It is a hierarchical neural networks to analyse the data.
Important aspects in deep learning process
- Question based on research

- Process on search
- Selection study
- Citation search
- Data extraction
- Synthesis &result
- reporting

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IX   DISCUSSION

Covid 19 diagnosis nucleic acid based detection for SARS - COV - 2 gene. Diagnosis and triaging of PUIs are crucial for the control of emerging diseases. Limitations of the nucleic acid laboratories testing implementing the new version of testing COVID 19 by the use of CT images. It helps for quickly and accurately diagnosing the disease. It is an AI algorithm that detecting Corona virus by CT images using deep learning method . By the use of deep learning mechanism tests the samples with 73% accuracy.

X ACKNOWLEDGMENT

XI CONCLUSION

CORONAVIRUS detection   using CT images is by using the deep learning of artificial intelligence.This works to help for the prediction results and self quarantine.It is the efficient mechanism for the detection of infections .The Corona virus is detecting based on the variations in the radio graphical changes in the lungs.

XII   REFERENCE

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