Covid Infection Detection by applying image processing on CT Images

Mrs. Sulakshana Nishikant Bhatlawande[1] , Ms. Sakshi Milind Gunde[2]

[1]sulakshananb@gmail.com , [2]sakshi.gunde96@gmail.com

[1]*Y. B. Patil Polytechnic, Akurdi, Pune*
[2]*Y. B. Patil Polytechnic, Akurdi, Pune*

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 its going on 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.*

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.

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.   PROPOSED SYSTEM

Below diagram shows the complete process of the system. Wherein admin uploads the CT image to our system thereafter various pre-processing steps takes places on the uploaded image. And also process like segmentation, feature extraction, classification and finally we will get result whether the CT Image has the covid infection or not. If covid is positive then system will identify the level of severity an based on it, system will suggest the necessary steps that user need to take. like he/she need to be done home quarantine or need to be hospitalized. And if the output is negative then our system will show result as no covid infection.
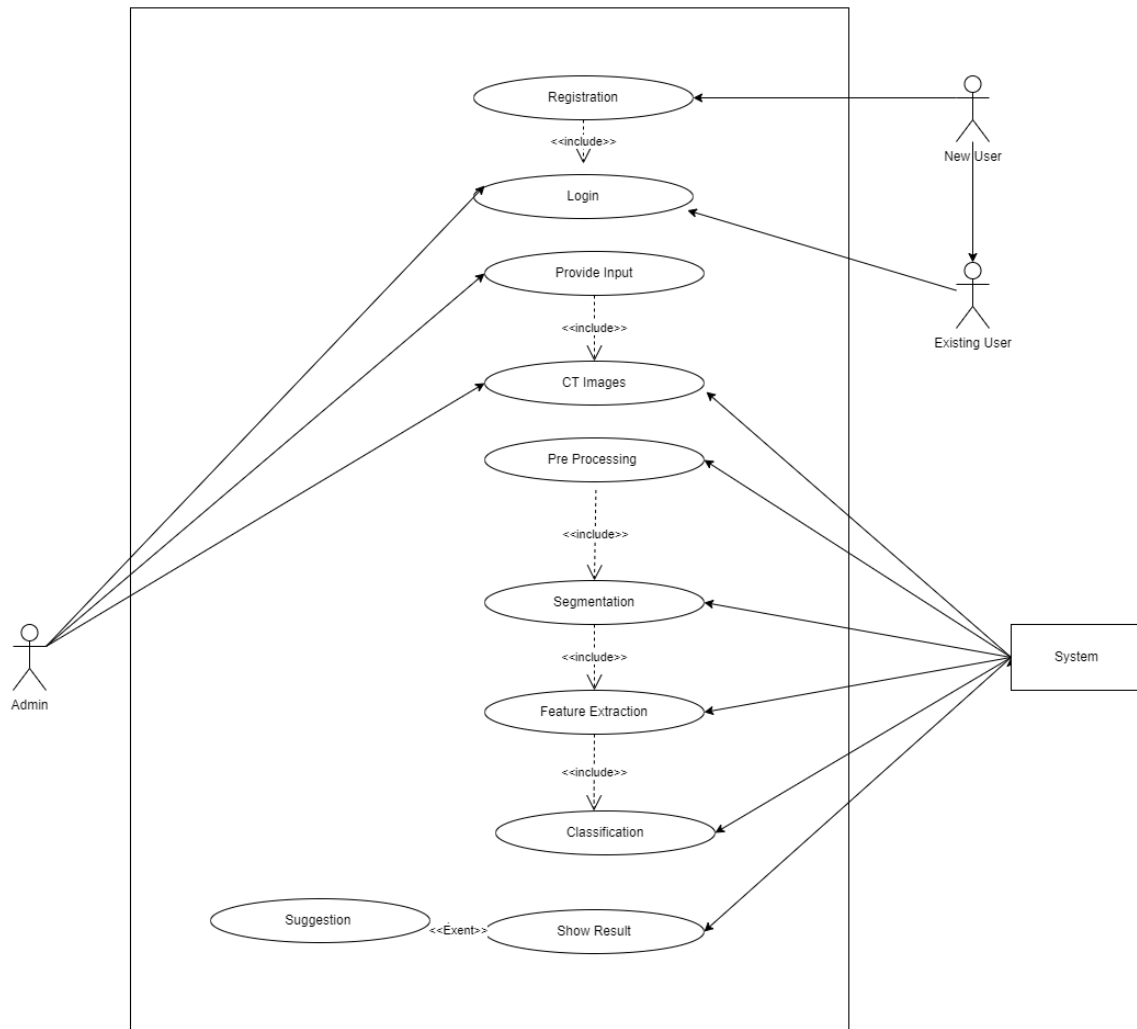
Step1:
Admin can Upload the CT Image of Lungs.
Step2:
System will perform Operations like Pre-Processing, Segmentation, Feature Extraction, Classification on that CT Images.
Step3:
Finally System will show output. i.e Covid infection Detection.

Output:
System will provide output as if the person is infected by covid or not, if infected than it will suggest necessary steps based on the level severity of infections.

Benefits of Proposed System

- Early identify the affected portion of lung, in order to avoid major risk.
- Detecting Covid-19 patient at initial stage, so that proper precautions and self
- quarantine can be done.
- To avoid lung failure.

III.   CONCLUSION

Our proposed will system plays a very important role as it helps in identifying the Covid-19 without any pain. User will have to just upload the CT scan image. Then system will perform operations on uploaded image like Pre-processing, segmentation, feature extractions, classification, etc so that it will give us the perfect outcome in few seconds.

REFERENCES

[1] "A novel coronavirus outbreak of global health concern" , C. Wang, P. W. Horby, F. G. Hayden, and G. F. Gao.

[2] "Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China", C. Huang, Y. Wang et al.

[3] Coronavirus COVID-19 global cases by the center for systems science and engineering at johns hopkins university," https://coronavirus.jhu.edu/ map.html, accessed: 2020-04-02

[4] "Correlation of chest CT and rt-pcr testing in corona virus disease 2019(COVID-19)in China:Areport of 1014 cases" T. Ai, Z. Yang et al.

[5] "The role of chest imaging in patient management during the COVID-19 pandemic: A multinational consensus statement from the fleischner society" G. D. Rubin, L. B. Haramati et al.

[6] "Review of Artificial Intelligence Techniques in Imaging Data Acquisition, Segmentation and Diagnosis for COVID-19", F. Shi, J. Wang et al.

[7] "Sensitivity of chest CT for COVID-19: Comparison to RT-PCR", Y. Fang, H. Zhang et al.