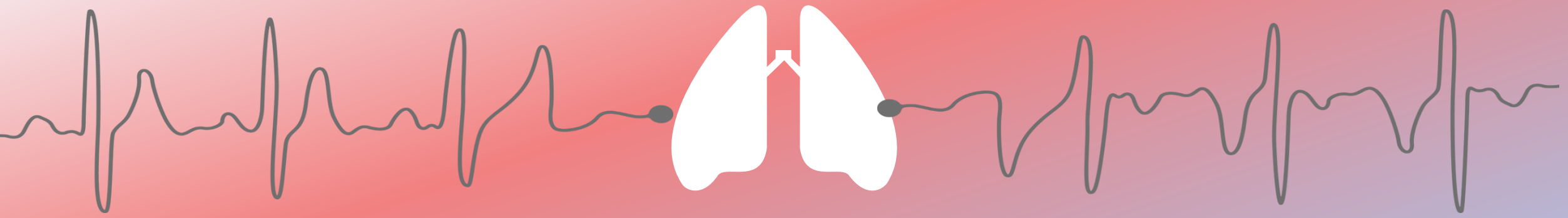


Lung Cancer Detection Using Convolutional Neural Network on CT Scan Images

Challenges Faced by Lung Cancer

Challenges Faced by Lung Cancer Patients:

1. Late Diagnosis:

- Lung cancer often remains asymptomatic in its early stages, leading to late detection.
- By the time symptoms appear, the disease may have already advanced significantly.
- Early detection is crucial for better long-term outcomes.

2. Stigma and Awareness:

- This stigma can lead to guilt, delayed diagnosis, and reluctance to seek medical help.
- Raising awareness about lung cancer and dispelling myths is essential.

3. Disparities in Care:

- Access to quality healthcare varies globally and even within countries.
- Disparities in screening, treatment, and follow-up care affect patient outcomes.

Significance of Lung Cancer Detection

Significance of Lung Cancer Detection Using our project:

1. Improved Early Detection:

- We can detect subtle patterns indicative of lung cancer at an early stage.
- Early detection leads to better survival rates and more effective treatment options.

2. Personalized Risk Assessment:

- One can assess an individuals risk of developing lung cancer based on their CT scan data.

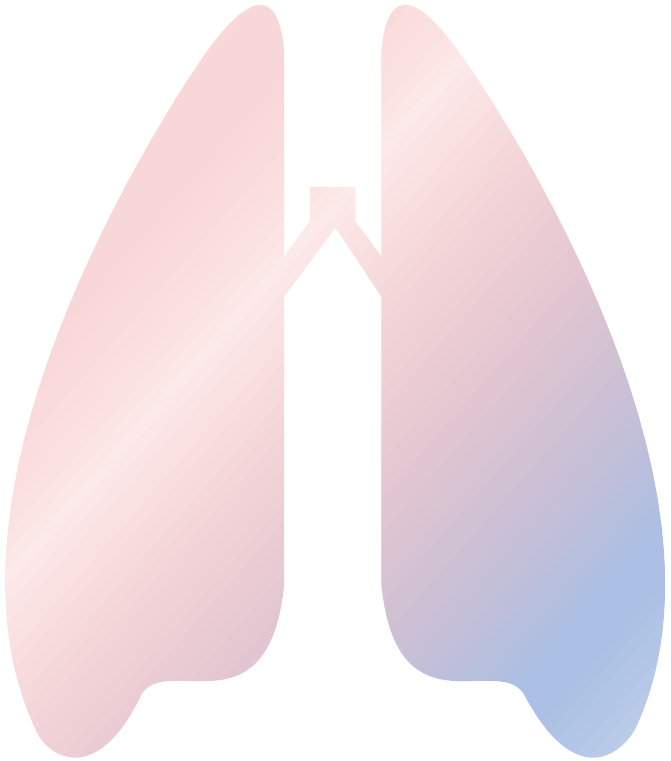
3. Reduced Radiation Exposure:

- It aids in low-dose computed tomography (LDCT) scans, maintaining image quality while reducing radiation exposure.

3. Efficient Workflow:

- IT streamlines lung cancer screening workflows.
- It automates tasks like image analysis, risk assessment, and stratification.
- This frees up healthcare professionals time and ensures consistent evaluations.

Dataset and Preprocessing



The images are collected from different sources by use of webscraping.

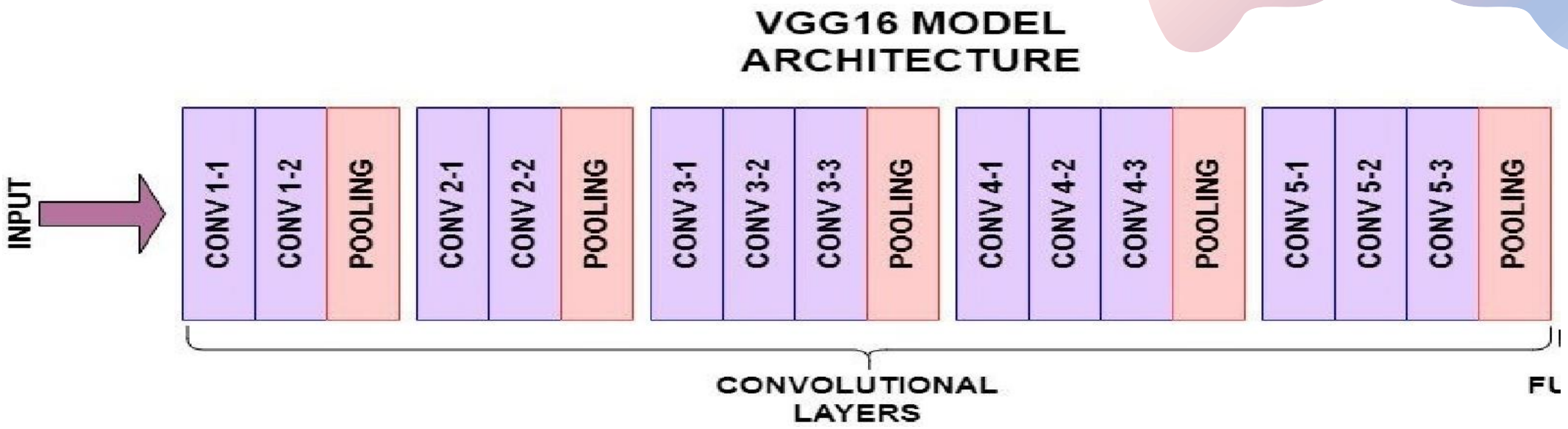
We are only detecting lung cancer not the classification of lung cancer so we have only positive and negative .

we apply data augmentation by using image processing e.g zooming,increase exposure, flips etc

Methodology:

worked with vgg16 Convolutional Neural Network (CNN) architeture of conv net

we also use k-fold technique, feature-extaction and fine-tunning technique to train the model



Results

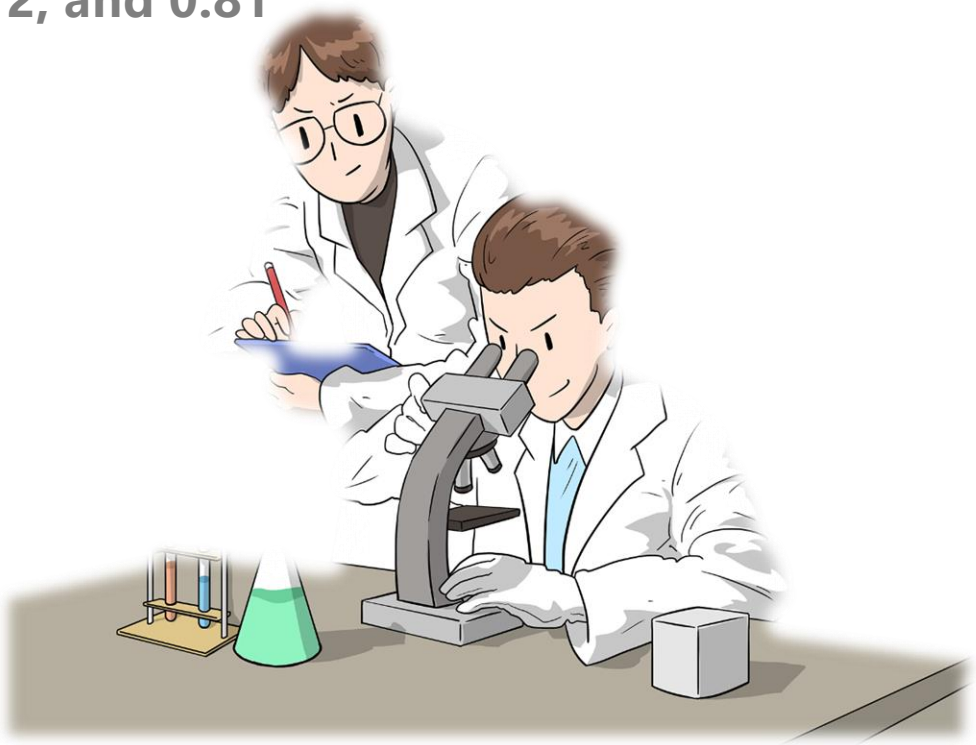
Result:

The accuracy achieved (96.11%).

Validation accuracy of 82.33%.

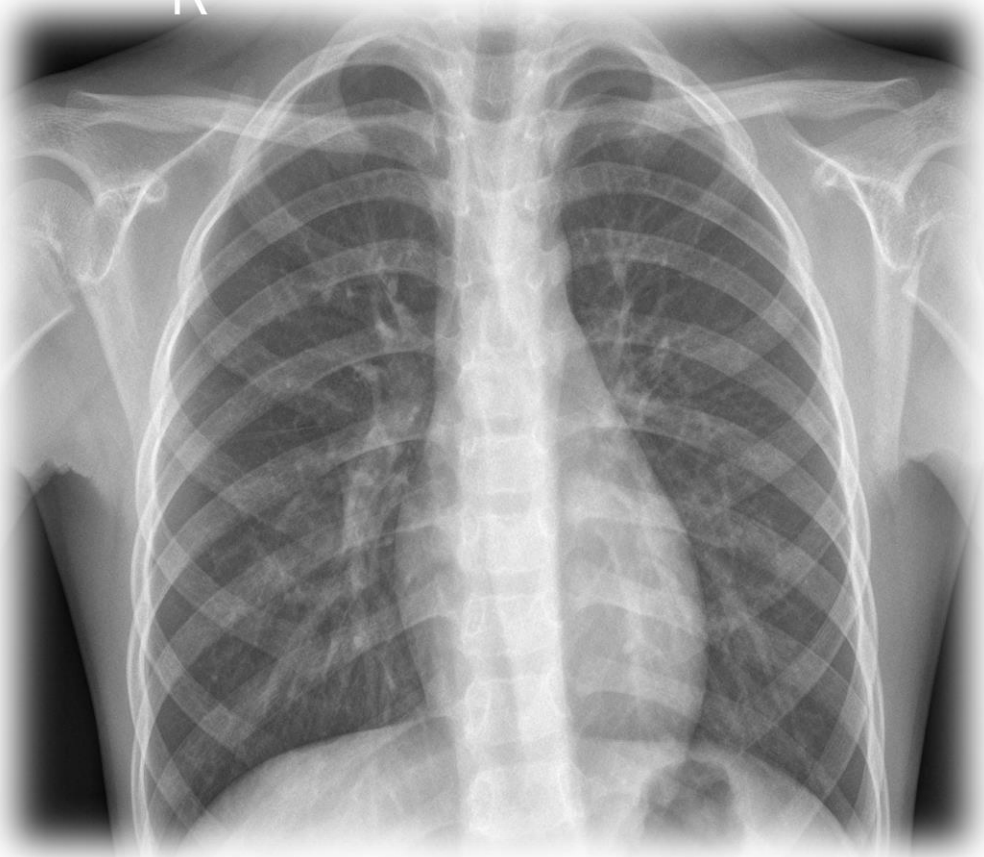
The precision ,Recall and F1-Score are 0.9142, 0.7272, and 0.81

respectively .



Sample Images

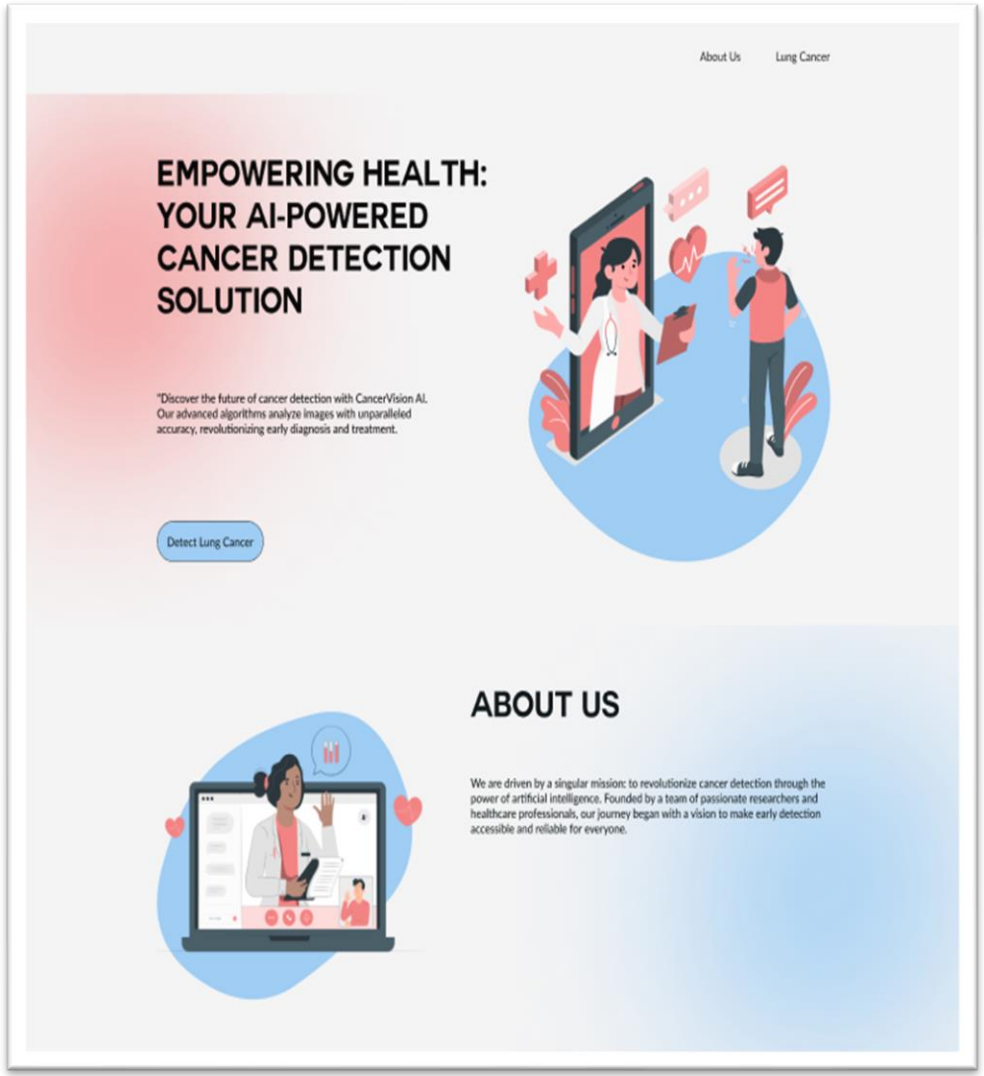
person with positive lung cancer

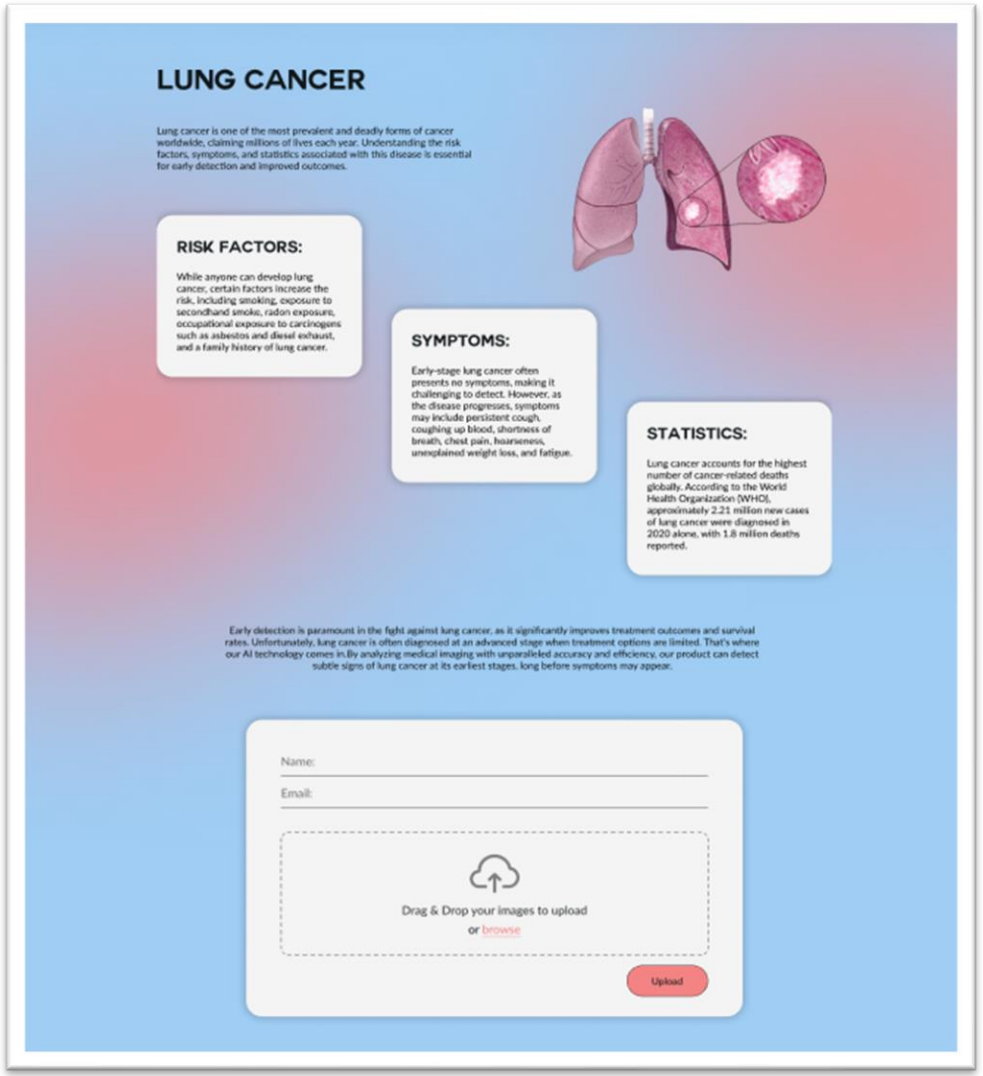


person with negative lung cancer

Demo:

GUI where users Can interact with project and can Input information and upload CT scan images.






Challenges

Challenges:

To obtain optimized hyperparameter values (such as the number of nodes, regularization, dropout percentage, etc.)

When collecting data from various sources, data distributions may change. Therefore, we need to normalize the data after gathering it.

Another challenge we encounter is determining how to extract essential features and which techniques to apply for achieving optimized results.

Conclusion

Conclusion:

Lung cancer is a deadly disease, and early detection is crucial for improving survival rates and we successfully achieved resolve the issue using “Lung Cancer Detection Using Convolutional Neural Network on CT Scan Images ”.