ALLIANCE UNIVERSITY

Private University established in Karnataka State by Act No.34 of year 2010
Recognized by the University Grants Commission (UGC), New Delhi

Celebrating 25 SILVER JUBILEE years of Alliance Education

Artificial Intelligence mini project
Recognition for Pneumonia using VGG16

Abstract

Pneumonia is an infection that inflames the air sacs in one or both lungs. The air sacs may fill with fluid or pus causing cough with phlegm or pus, fever, chills, and difficulty breathing. Pneumonia can range in seriousness from mild to life-threatening. It is most serious for infants and young children, people older than age 65, and people with health problems or weakened immune systems. Symptoms The signs and symptoms of pneumonia vary from mild to severe, depending on factors such as the type of germ causing the infection, and age and overall health. Mild signs and symptoms often are similar to those of a cold or flu, but they last longer. Due to this reason some times it may go undetected by doctors. So we are trying to train a modal which can detect pneumonia at the beginning stage only, so that we can save lives. We are basically using CNN with combination of supervised learning.

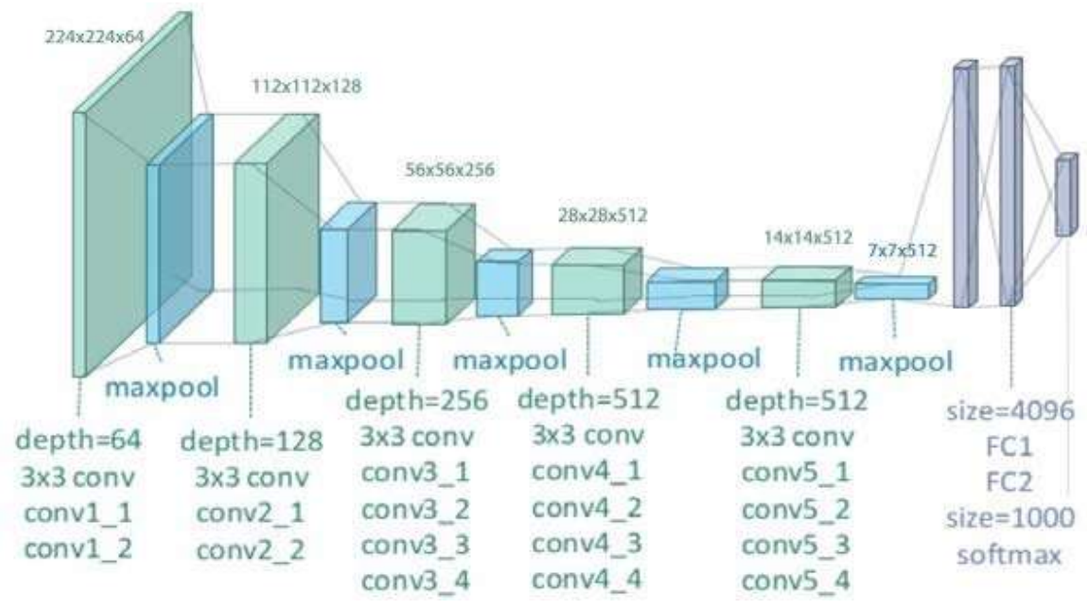
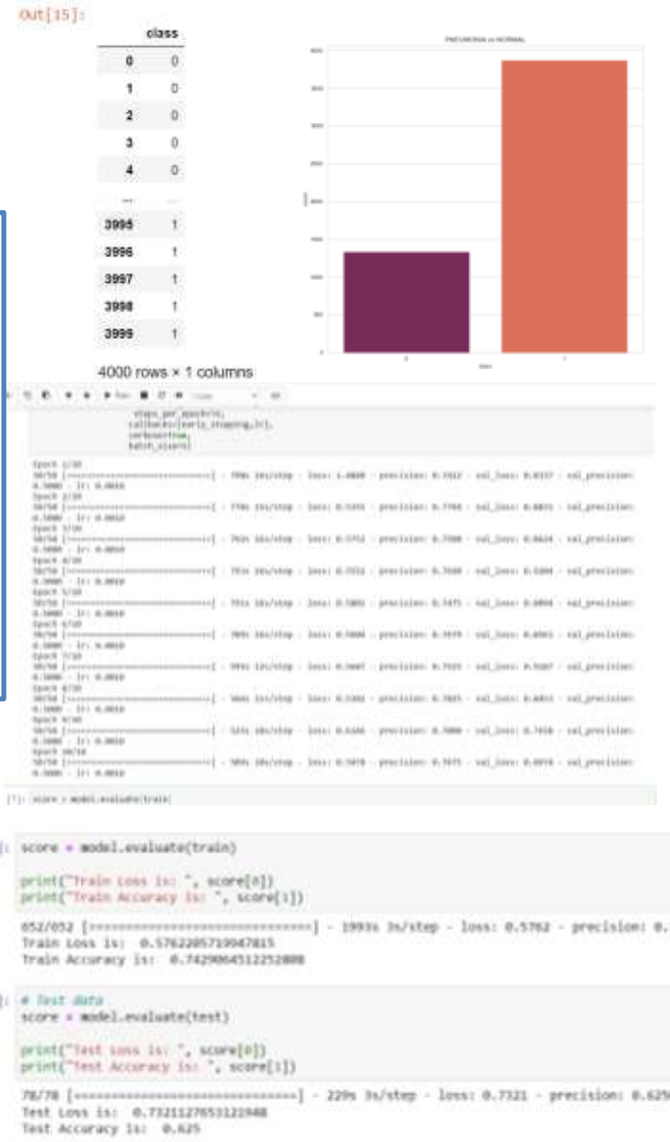


Image Net

It is an image database organized in which each node of the hierarchy is depicted by hundreds and thousands of images.



Very Deep Convolutional Networks for Large-Scale Image Recognition

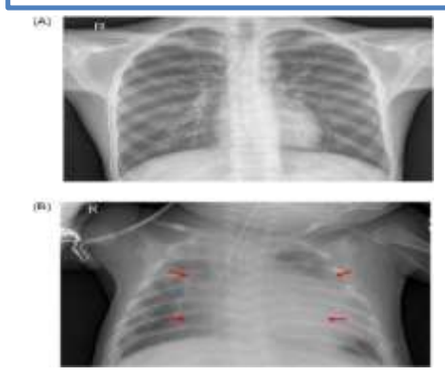
In this work we investigate the effect of the convolutional network depth on its accuracy in the large-scale image recognition setting. Our main contribution is a thorough evaluation of networks of increasing depth using an architecture with very small (3x3) convolution filters, which shows that a significant improvement on the prior-art configurations can be achieved by pushing the depth to 16-19 weight layers. These findings were the basis of our ImageNet Challenge 2014 submission, where our team secured the first and the second places in the localisation and classification tracks respectively

Symptoms of pneumonia

- Chest pain when you breathe or cough
- Confusion or changes in mental awareness (in adults age 65 and older)
- Cough, which may produce phlegm
- Fatigue
- Fever, sweating and shaking chills
- Nausea, vomiting or diarrhea
- Shortness of breath

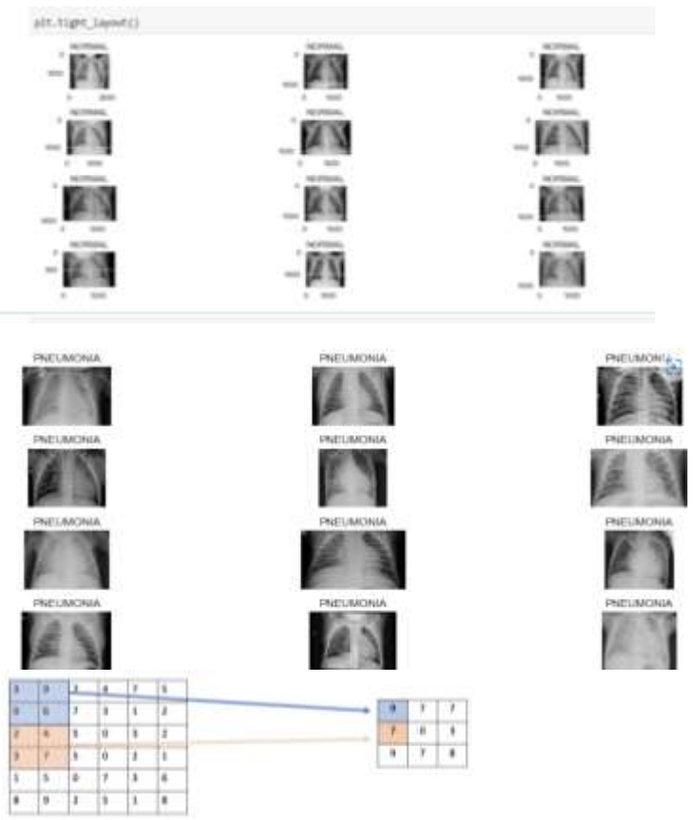
Supervised learning

Supervised learning, as the name indicates, has the presence of a supervisor as a teacher. Basically supervised learning is when we teach or train the machine using data that is well labelled.



CNN

A **Convolutional Neural Network (ConvNet/CNN)** is a Deep Learning algorithm which can take in an input image, assign importance (learnable weights and biases) to various aspects/objects in the image and be able to differentiate one from the other.
The architecture of a ConvNet is analogous to that of the connectivity pattern of Neurons in the Human Brain and was inspired by the organization of the Visual Cortex. Individual neurons respond to stimuli only in a restricted region of the visual field known as the Receptive Field. A collection of such fields overlap to cover the entire visual area.



Conclusion:

With training the accuracy of modal will increase. With our project we want to help doctors in dectecting pneumonia at the starting stage only. So that we can treat the patient on time and save life's of many people..

Refences:

•https://machinelearningmastery.com/types-of-classification-in-machine-learning/#:~:text=Binary%20classification%20refers%20to%20predicting,of%20more%20than%20two%20classes.
•https://towardsdatascience.com/a-comprehensive-guide-to-convolutional-neural-networks-the-eli5-way-3bd2b1164a53
•https://programmathically.com/what-is-pooling-in-a-convolutional-neural-network-cnn-pooling-layers-explained/
•https://www.geeksforgeeks.org/activation-functions-neural-networks/

By- CHANDANA MN
20030141cse060
BANDI RUPA SRAVYA
PROV/BTECH-CSE/LE-21/002
Keshav Murthy
20030141cse032