ABSTRACT

PNEUMONIA DETECTION FROM CHEST X-RAY IMAGES USING CNN

Pneumonia is an infection that inflames your lungs' air sacs (alveoli). The air sacs may fill up with fluid or pus, causing symptoms such as a cough, fever, chills and trouble breathing. Bacteria and viruses are the main causes of pneumonia. Pneumonia-causing germs can settle in the alveoli and multiply after a person breathes them in. Pneumonia can be contagious. The bacteria and viruses that cause pneumonia are usually inhaled. Commonly affected are Infants, children and people over 65 years in age.
Chest X-rays are used for detecting the Pneumonia infection and to locate the infected area in the lungs. So, To detect the the pneumonia radiologist have to observe the chest X-ray and he/she has to update the doctor correctly. The main objective of this model is to identify if the person has Pneumonia or not with high accuracy so that the person can get treatment as soon as possible. Deep Learning models which are trained correctly by using good datasets can be helpful for doctors. To train the model for detecting whether the person has pneumonia or not, A Convolutional Neural Network(CNN) is used. The CNN can train the images of chest X-rays and then it can predict with high accuracy.

The dataset we received in Kaggle is actually distributed into 3 folders (train, test, val) and individually, they contain subfolders for each image category (Pneumonia/Normal).
There are a total of 5,863 X-Ray images (in JPEG Format) distributed into 2 categories (Pneumonia/Normal).

Future Work

- Training selected models with a higher no of epochs to try to reach convergence.
- Gathering more data for a better model.
- Testing this data on different models.
- This work can be extended to detect and classify X-Ray images with lung cancer & Pneumonia.

Submitted by
Resika R S Rollno:49