Detection of Pneumonia from chest X-ray image using machine learning.

Sponsoring professor:
Mr. Rajeev Gupta
(Asst. Professor ECED ,MNNIT)

[Ashutosh Mohapatra ,Pratiush Prasunn, B.Krusi Teja]

Abstract :
Pneumonia is inflammatory condition of lung affecting primarily the small air sac called alveoli. Pneumonia affects approximately 450 million people globally and 4 million death per year according to a WHO report. For developing country like India , with rapid urbanisation and highly polluted cities the condition becoming more worse.On an estimate Pneumonia kills 1 children below 5 every 2 minute ,clearly we need faster diagnosis of the disease . Diagnosis of Pneumonia include chest X-ray analysis by trained medical practitioner and other test like sputum test. A machine learning model can easily learn pattern and classify x-ray image into Pneumonia and non Pneumonia . We propose a machine learning based solution to automatically detect pneumonia at the accuracy level of trained radiologists. We will be using deep convolutional neural network to develop model that classify Pneumonia affected chest X-ray from normal chest X-ray image .

Introduction :
Pneumonia causes inflammation in the air sacs in lungs, which are called alveoli. The alveoli fill with fluid or pus, making it difficult to breathe. This disease is generally diagnosed by examination of X-ray radiograph, the radiologist search for white spots which shows the presence of pneumonia in the person.These pattern for pneumonia can be easily detected through image processing and machine learning algorithm.This is supervised learning task which classify x-ray into two class pneumonia and non pneumonia.

Methodology :

As we have to classify x-ray image into pneumonia affected and healthy ,this is supervised learning task and we will be using deep neural network to solve the problem of classification. First we preprocess the x-ray image to suppress noise from the image .For noise removal we have used Gaussian median filter.These filter have proved to be best for noise removal of poisson type. Then we use image enhancement for improving the contrast of image. For image processing task we have used open source OpenCv module of Python.