DL Project Proposal

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1 Problem Statement

Pneumonia often becomes a life threat to children under five years. In developing countries, the death rate of children dying from pneumonia is higher than the combined death rate of HIV/AIDS and measles. Thus, early detection of pneumonia is very critical. Chest X-ray images can provide a deep insight into pneumonia-affected lungs. We compare various deep learning models' performance on the popular chest X-ray dataset and suggest the best model to use to detect pneumonia.

2 About the dataset

The chest x-ray dataset (1) is organized into 3 folders (train, test, val) and contains subfolders for each image category (Pneumonia/Normal). There are 5,863 X-Ray images (JPEG) and 2 categories (Pneumonia/Normal).

3 Literature Survey

Since the main aim is to detect affected areas/patterns in the lungs, models like ResNet50 (2), AlexNet (3), and MobileNet (4) can be tried on this dataset. We also intend to try out two GAN-based models DCGAN (5) and pix2pix (6). Use of Graph Convolution Networks (7) to do this analysis also seems like an interesting approach.

4 Our Solution

We want to find the model that works best at identifying chest scans with pneumonia, hoping for a 75-90% success rate based on the limited time and resources available as well as the complexity of the features used for the scans.

References

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