ALDA Project Proposal

1 Title

Image Classification - Detecting whether a person has pneumonia using chest x-ray scan

2 Dataset

This dataset contains thousands of validated OCT and Chest X-Ray images :-

https://data.mendeley.com/datasets/rscbjbr9sj/3

3 Project Idea

We will be building an image classifier which detects if a person has pneumonia given their x-ray image. The given dataset contains x-ray scans of more than five thousand patients which are splitted for training and testing.

Our goal is to build a deep convolutional neural network which can classify the given x-ray scans into one of the three classes - 'bacterial pneumonia' , 'viral pneumonia', and 'no pneumonia'. We intend to explore various concepts required to build state-of-the-art CNNs such as pooling, padding, dropout etc and various optimizers to improve our model. The project lifecycle will explore all areas of data mining i.e data pre-processing, data transformation, model building and model evaluation.

4 Reference Papers -

4.1 Identifying Medical Diagnoses and Treatable Diseases by Image-Based Deep Learning

https://www.cell.com/action/showPdf?pii=S0092-8674%2818%2930154-5

4.2 Convolutional Neural Network for Image Classification

https://pdfs.semanticscholar.org/b8e3/613d60d374b53ec5b54112dfb68d0b52d82c.pdf

5 Team and Work distribution -

Name:	Responsibility:
Mohit Gupta	Data pre-processing and help in model building
Rajat Dange	Research various CNN architectures and implement classification model
Rutvik Kolhe	Research optimization techniques and improving model accuracy.

6 Midterm milestone -

By the due date for midterm report we intend to implement a workable CNN model to detect pneumonia in an x-ray scan with reasonable accuracy.