

# Image Processing Using Deep Learning



# Today's Agenda

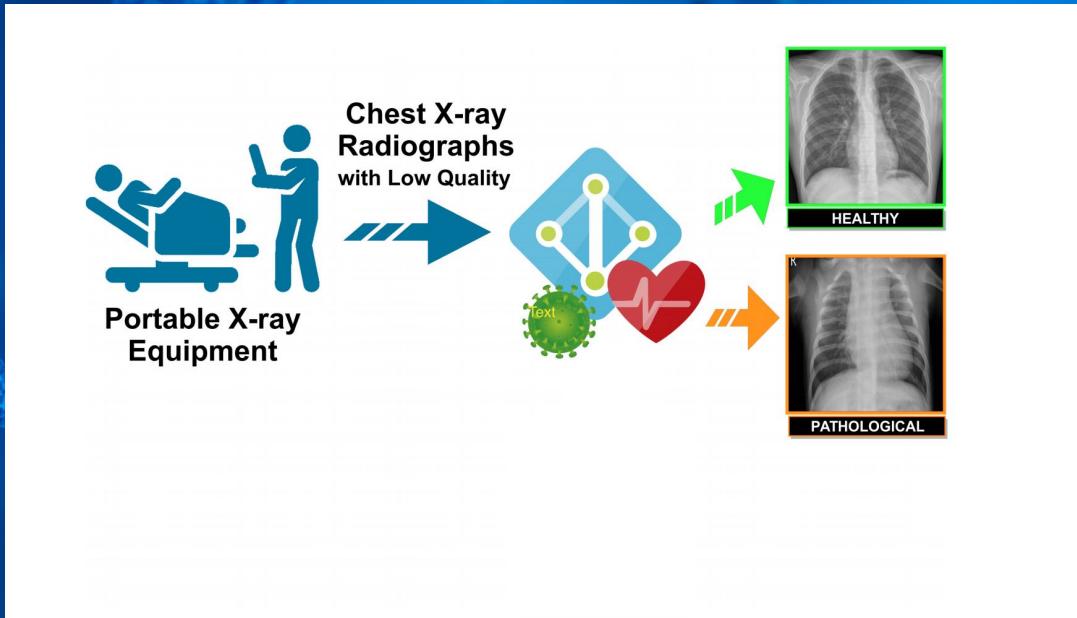
- ▶ Project overview
- ▶ Business Problem
- ▶ Data
- ▶ Methodology
- ▶ Analysis
- ▶ Model
- ▶ Result
- ▶ Conclusion
- ▶ Next step

# 1. Project Overview



- ▶ Pneumonia is an infection that inflames air sacs in one or both the lungs, which may fill with fluid.
- ▶ It requires early diagnosis else it might lead to complications.
- ▶ This project focus on diagnosis of pneumonia using chest x\_ray images.

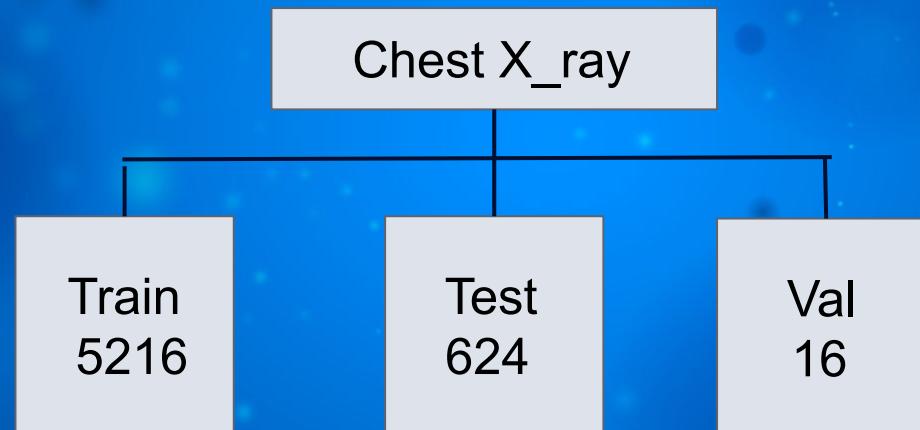
## 2. Business Problem



- ▶ The current outbreak of covid have led to many deaths of patients mainly due to pneumonia like symptoms in lungs.
- ▶ Even the trained radiologist sometimes finds it difficult to detect pneumonia in lungs accurately. Hence one of the leading hospital wants to build an efficient model to detect whether the X-ray of a person has pneumonia or not.

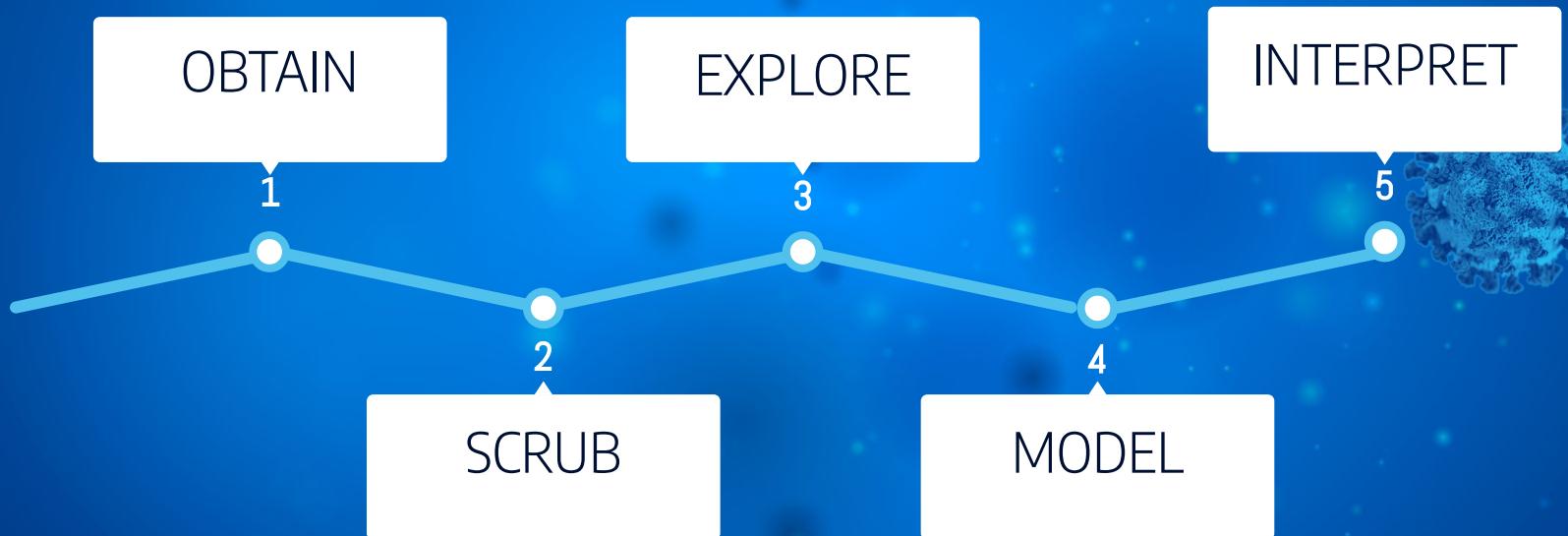
# 3. Data

Data is collected from Kaggle and consist of chest x\_ray images



# 4. Methodology

# OSMEN Approach



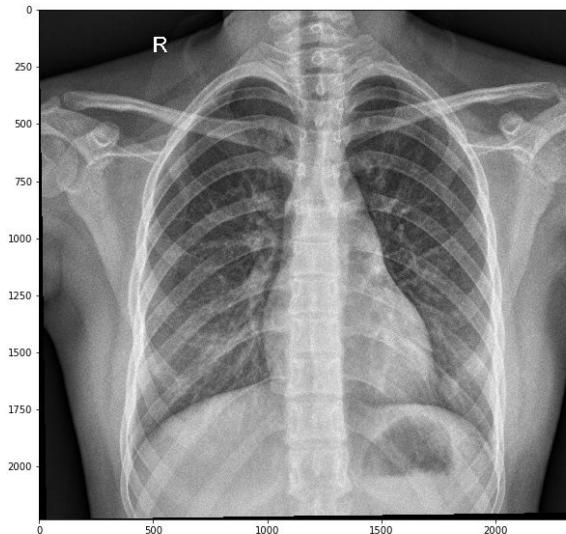
# 5. Analysis

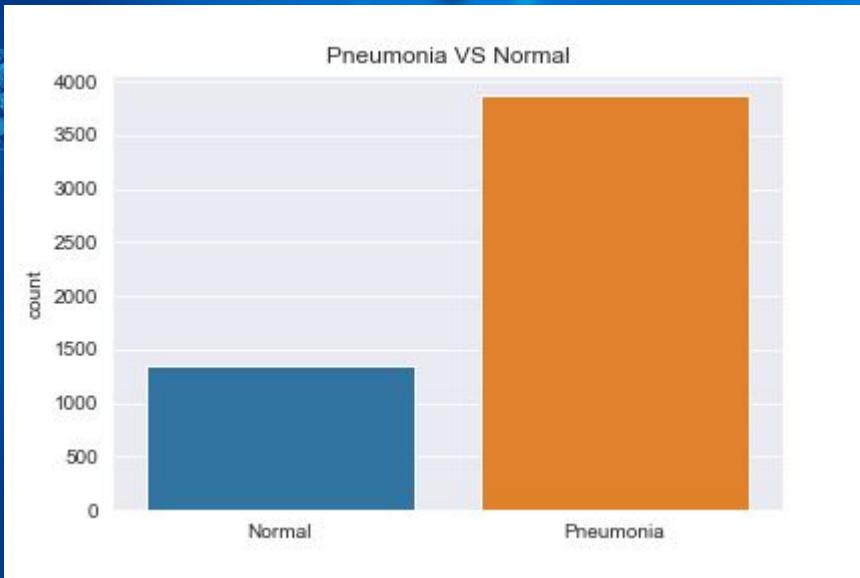
- ▶ Comparison of chest x\_ray images which has pneumonia and no pneumonia.
- ▶ All the images were downsized to 128X128 pixels and RGB color channels.

Pneumonia

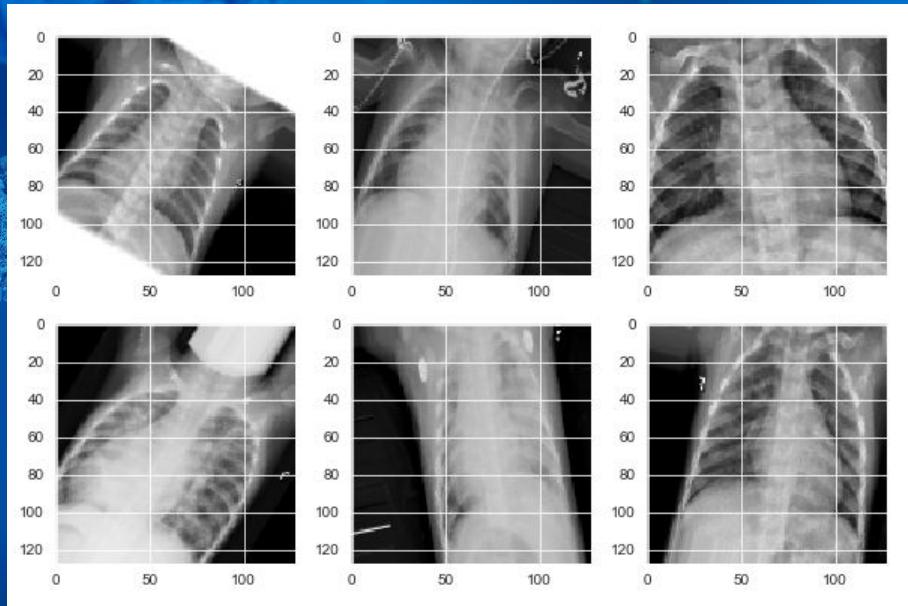


Normal





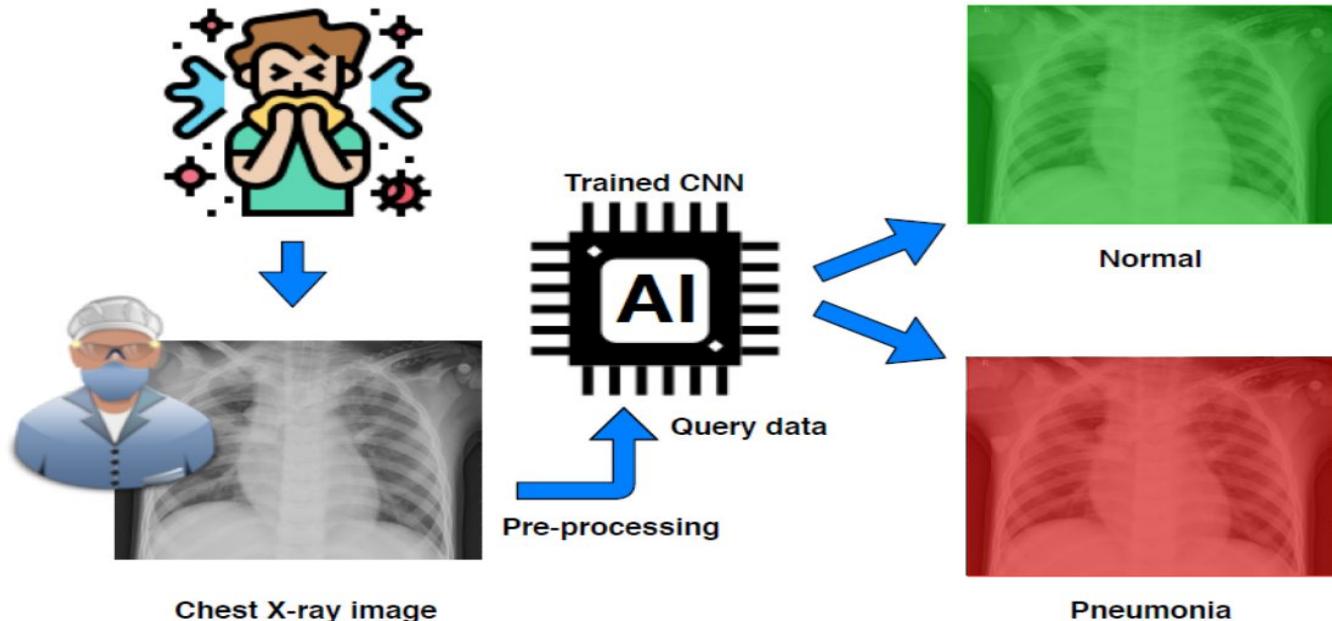
- ▶ There is a imbalance in our image dataset
- ▶ 74% of Pneumonia cases and only 25% of normal cases.



- ▶ Data imbalance is dealt by Data Augmentation.
- ▶ Rotation, zoom, width shift, height shift, vertical flip and horizontal flip.

# 6. Model

# The backend of our model prediction

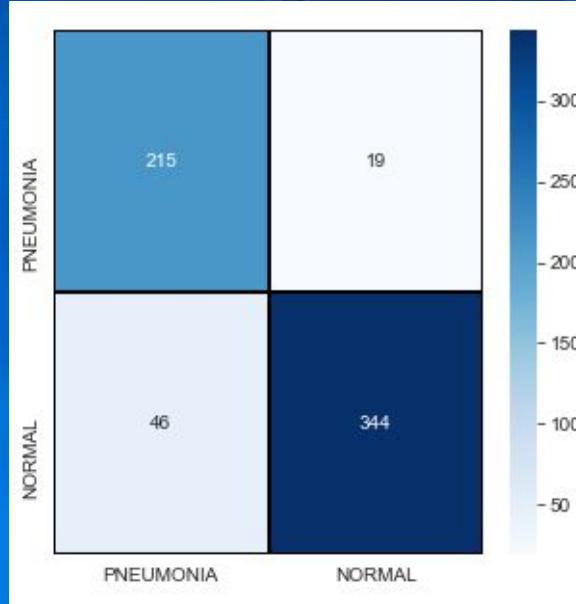
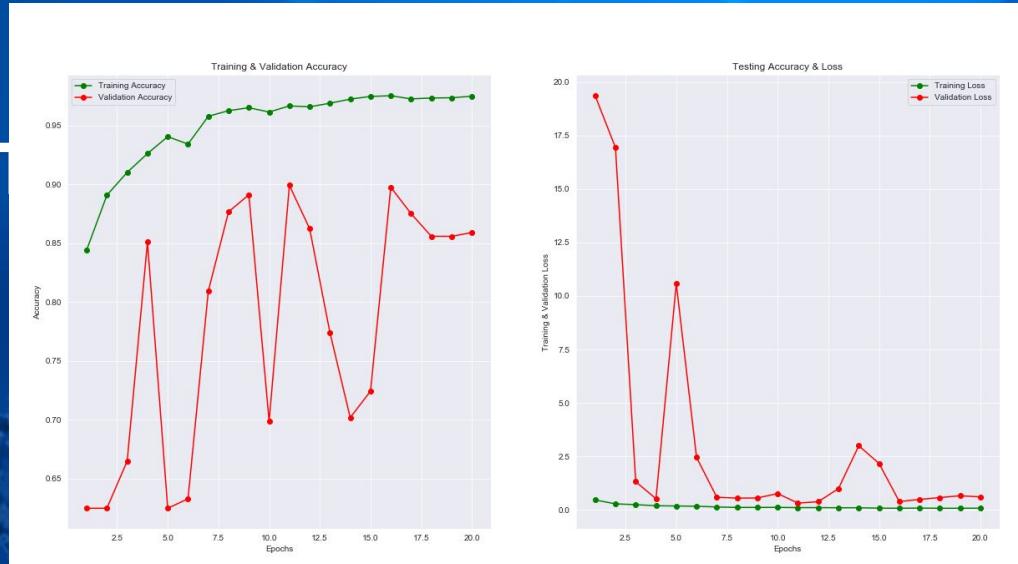


# 7. Results

# Accuracy and loss rate graph of the model prediction

**Train Accuracy : 88 %**

**Test Accuracy : 89 %**



**True Positive : 215**

**True Negative : 344**

**False Positive : 46**

**False Negative : 19**

# 8. Conclusion

- ▶ Model performed well in terms of prediction.  
The accuracy rate and confusion matrix result was higher compared to other models performed.
- ▶ Can be used for image classification purpose

# 9. Next Step

- ▶ The overfitting of accuracy graph needs to be improved.
- ▶ More data needs to be collected to train the model.
- ▶ More layers and complex structure.
- ▶ Comparison of original report from hospital and the model prediction.

# Thank You!

Any questions?

You can find me at

**[janakipurushothamman@gmail.com](mailto:janakipurushothamman@gmail.com)**