

# Detecting Pneumonia using Chest X-Rays

# Pneumonia

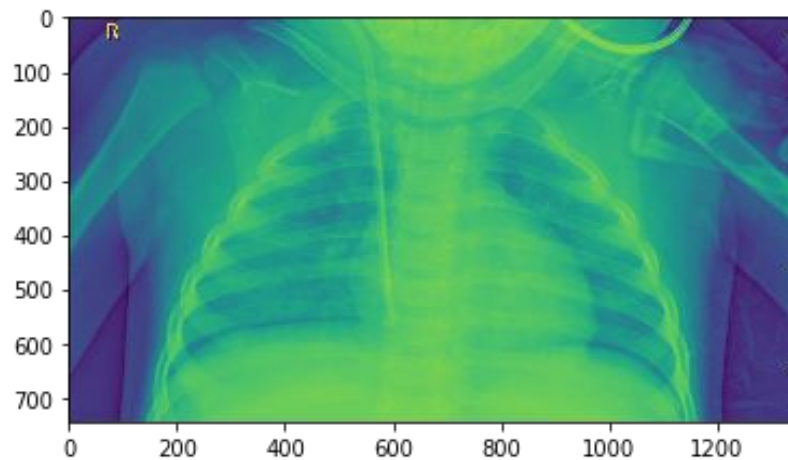
- Affects millions
- Most common cause for hospital admission
- Faster detection, earlier treatment

## Data from Kaggle

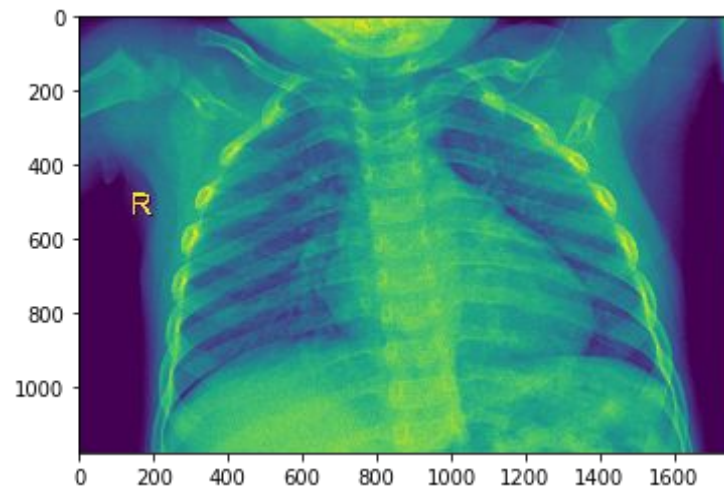
<https://www.kaggle.com/paultimothymooney/chest-xray-pneumonia>

# Chest X-Rays

Pneumonia

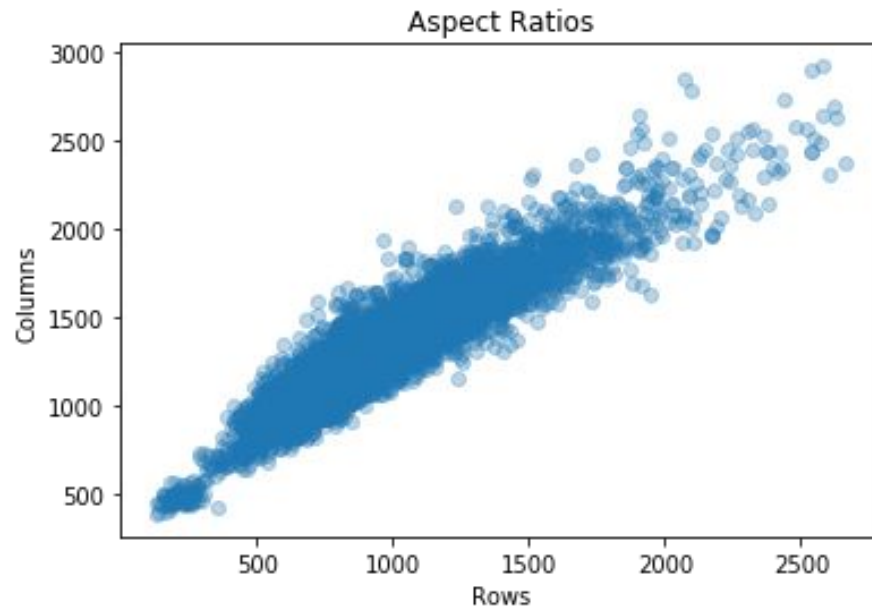


Normal



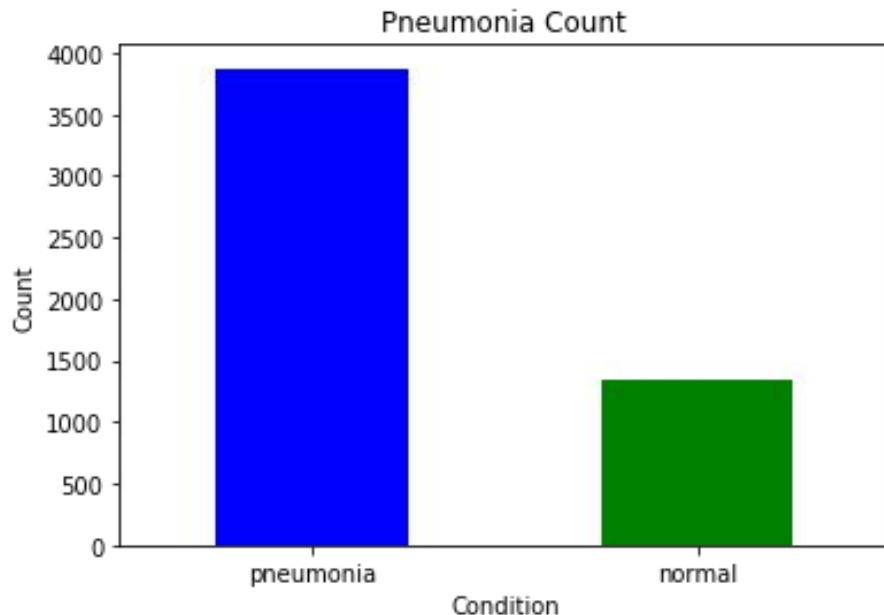
# Image Size

- Images vary in size
- Suggests linear relationship between rows and columns
- Average aspect ratio = 1.44
- Use this ratio to resize images for deep learning model



# Category Counts

- More pneumonia images than normal images
- Imbalanced data set
- Use F score, precision, recall to evaluate model



# Preliminary Model

Use Keras to implement deep learning model with convolution layers.

After 10 epochs of training,

Acc = 0.9992

F1 = 0.9994

Evaluating our model on the test data,

Acc = 0.7756

F1 = 0.8434

Strongly suggests overfitting.

# Next Steps

- Add weight regularization and dropout to deal with overfitting
- Improve model performance by adding layers and adjusting parameters
- Use data augmentation to preprocess images