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README.md

Overview

Detecting Pneumonia with Deep Learning and Convolutional Neural Networks

Shares common symptoms with other conditions Tests to diagnose pneumonia are great but they take days for results A doctor can misdiagnose pneumonia from an X-ray Failure to notice inflammation Irregular pattern Human error



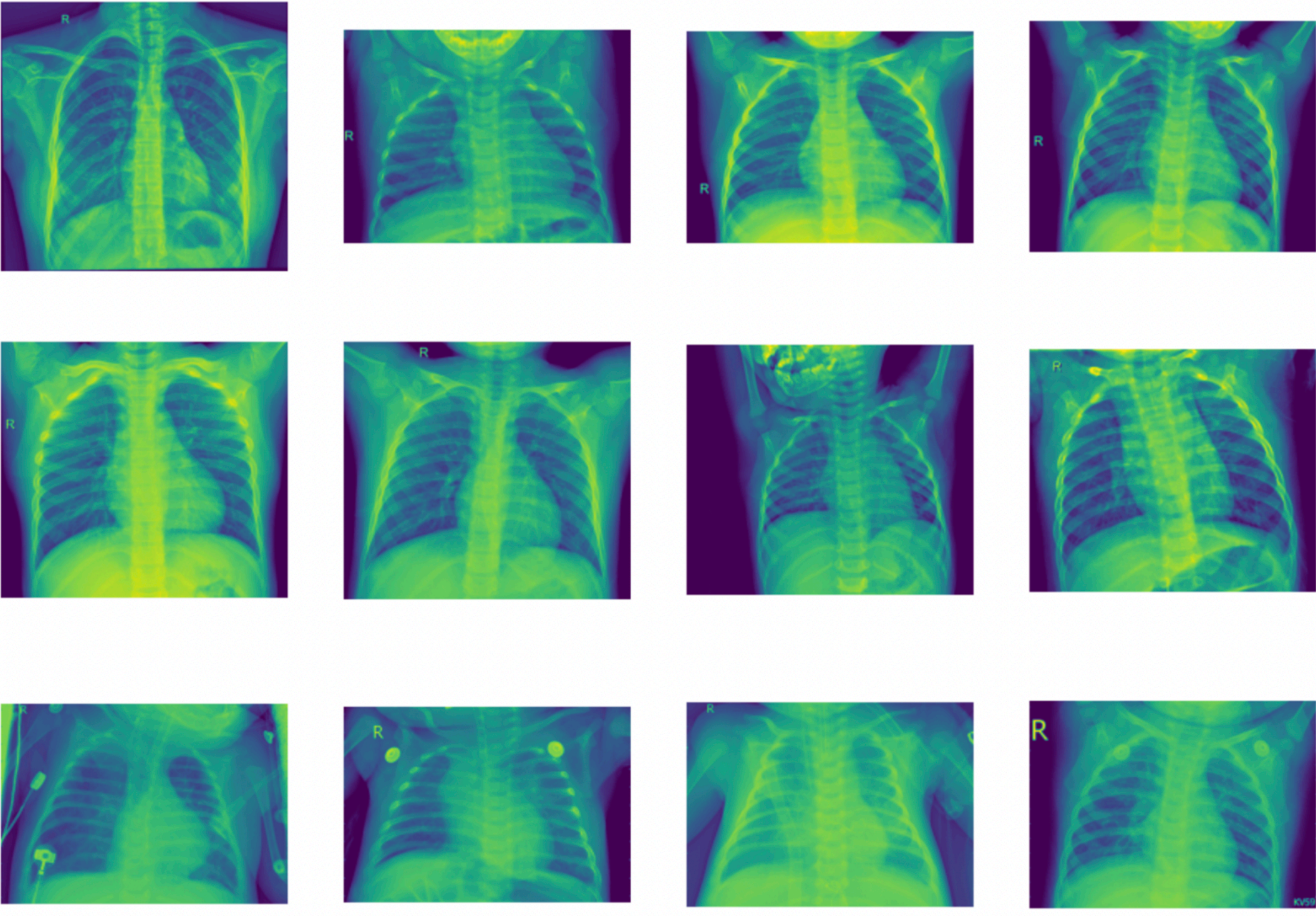
Data Analysis

I have 5216 pneumonia and normal x-ray images

X-ray Images

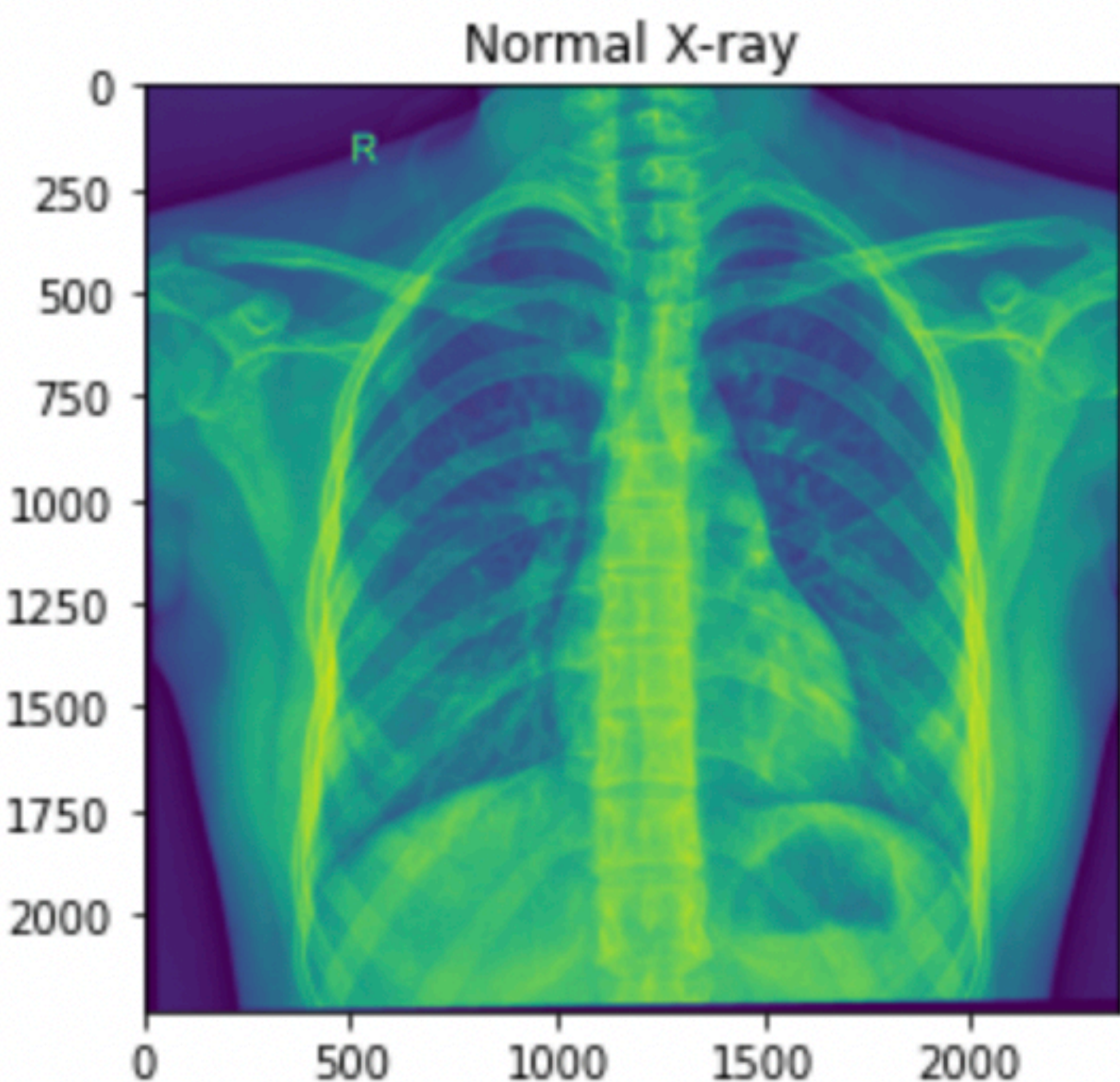
I can't compare with normal and pneumonia x-rays

Discovering patterns with your naked eye is hard It's inconsistent Unable to confidently replicate Conflicting diagnoses may occur



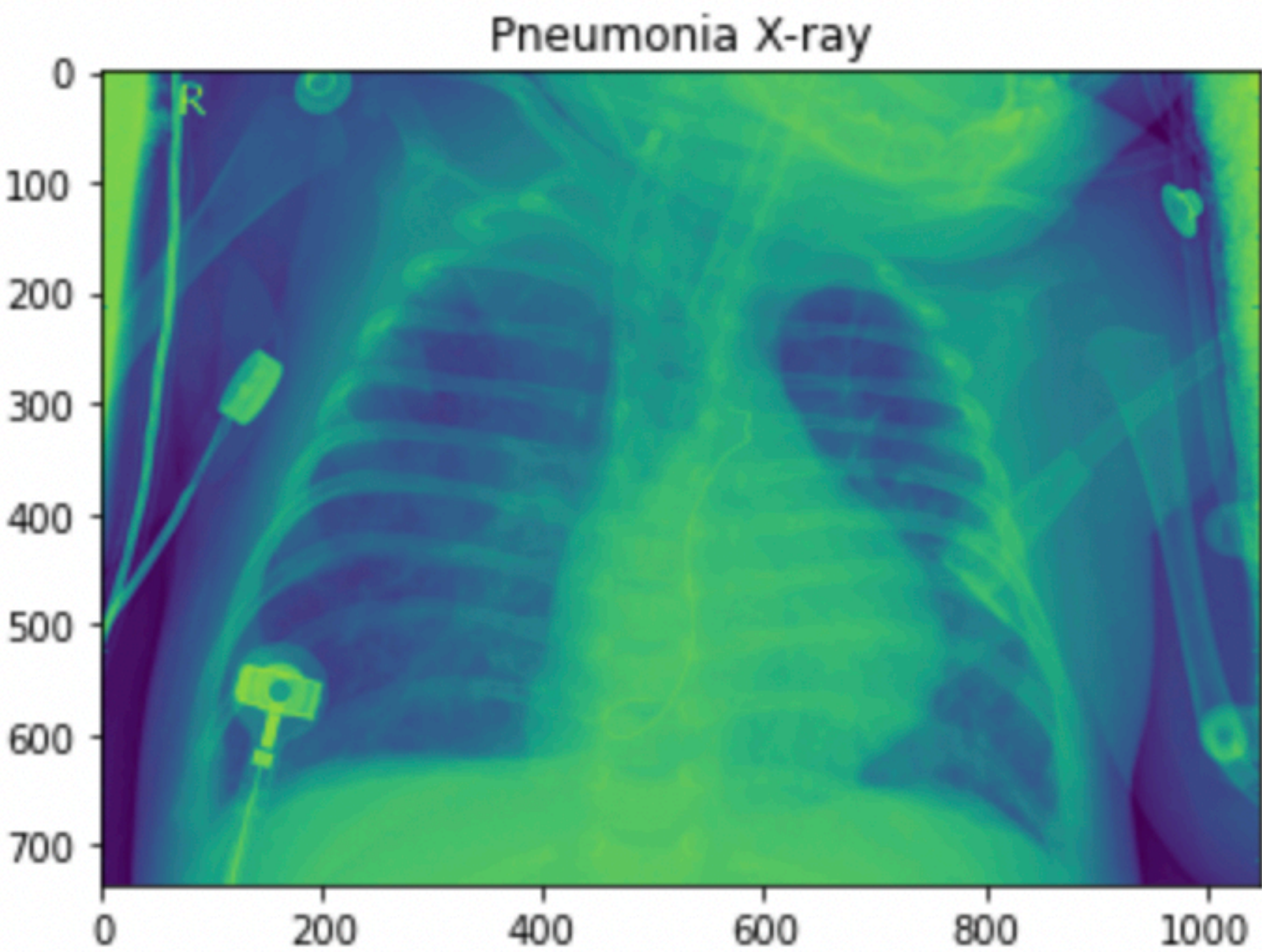
Normal X-ray

This is Normal X-ray



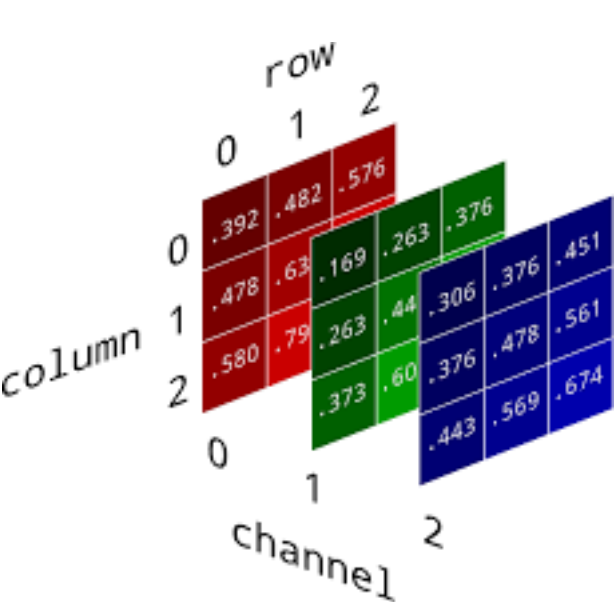
Pneumonia X-ray

This is pneumonia X-ray



Preprocessing

I transformed the images to tensor (150,150,3)



Train Model

Model 1

I create first test model

In [62]: model.evaluate(test_generator)

5/5 [=====] - 5s 858ms/step - loss: 0.6627 - accuracy: 0.8141

Out[62]: [0.6626965999603271, 0.8141025900840759]

Model 2

I developed the model

: model.load_weights('best.h5')
model.evaluate(test_generator)

5/5 [=====] - 3s 540ms/step - loss: 0.3508 - accuracy: 0.8798

: [0.3507813513278961, 0.879807710647583]

Conclusion

Our model is:

Thousands of times faster at predicting pneumonia than any doctor 3% more accurate than a doctor

More accessible than a doctor

Provides a mathematic approach to evaluating image data

Reading an X-ray is closer to getting blood work results with our model

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