

# X-ray Image Classification

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# UK Radiologists

- Fewer Radiologists than European Avg
- Impacts Cost and Quality
- Aging Workforce

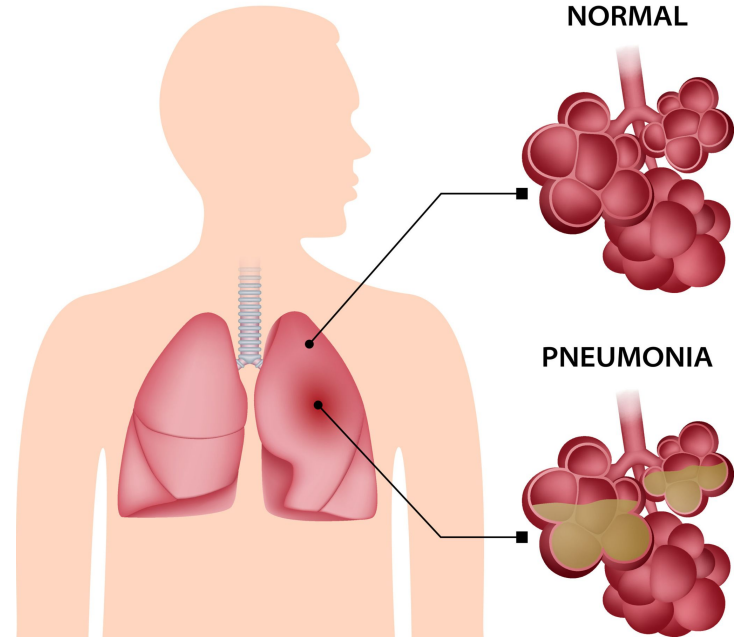


Source

# Business Problem

Can we use chest X-ray images to diagnose a patient with pneumonia?

## PNEUMONIA

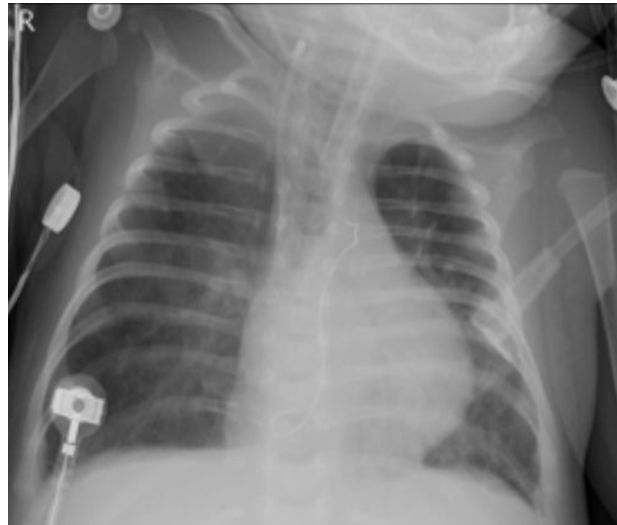


# Data

- 5,863 X-ray images
- 1-5 years olds



Normal



Pneumonia

# Method

- Accuracy Goal: 90%
- Recall Goal: 95%

Normal & Diagnose Normal	Normal <u>BUT</u> Diagnose Pneumonia
Has Pneumonia <u>BUT</u> Diagnose Normal	Has Pneumonia & Diagnose Pneumonia

# Our Model

- Accuracy: 90%
- Recall: 98%
- Helpful for early detection  
and pneumonia treatment

Normal & Diagnose Normal 0.69	Normal <u>BUT</u> Diagnose Pneumonia 0.31
Pneumonia <u>BUT</u> Diagnose Normal 0.021	Pneumonia & Diagnose Pneumonia 0.98

# Future Analysis

- **Bacterial vs Viral Pneumonia**
- **Expand Diagnosis Model**
- **Model Implementation in other countries**

# Thank you! Any Question?

## Appendix:

[Workforce Review: Radiology Aligning demand and capacity in a changing healthcare environment](#)

[The NHS does not have enough radiologists to keep patients safe, say three-in-four hospital imaging bosses Article](#)

[Annual rate of radiographers and radiologists in England from 2010/11 to 2017/18, per 10,000 MRI and CT scans](#)

[Editorial: Discrepancy and Error in Diagnostic Radiology](#)

[Error and discrepancy in radiology: inevitable or avoidable?](#)