

Detection of Pneumonia from Chest X-rays

Alphonso Woodbury & Vivian Dang



4 Facts about Pneumonia

01

It is an infection that inflames air sacs in the lungs which may fill with fluid or pus

02

Most common reason for US children to be hospitalized

03

Misdiagnosis and lack of proper treatment may lead to lung failure, septic shock, and/or death

04

US top 10 most expensive conditions

(>\$13B annually)

Our Solution

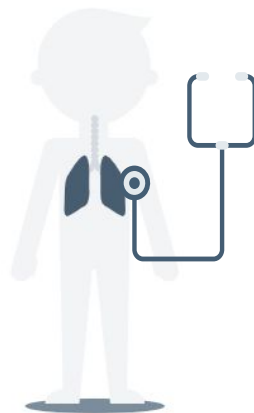
- 5,856 Pediatric Chest X-rays
 - 1,583 normal
 - 4,273 pneumonia
- Model correctly identifies >90% of patients with pneumonia
- Assumptions:
 - Normal distribution of age
 - No underlying diseases like congestive heart failure or scarring in lungs

Normal



Pneumonia





Recommendations:

- Integrate our model into medical software to automatically analyze patient chest x-rays
- Model results should be verified by a health professional
- Utilize model to detect misdiagnoses from old chest x-rays



Next Steps

Model Improvement

- Continue to use transfer learning to improve model performance (CheXNet, DenseNet)
- Data augmentation for normal chest x-rays to reduce data imbalance

Further Research

- Identifying the cause of pneumonia (viral vs bacterial)
- Distinguish pneumonia vs congestive heart failure on chest x-rays

CONCLUSIONS

Pneumonia may become life threatening
if not diagnosed and treated promptly

Our model can correctly identify >90% of
patients with pneumonia

Together, lets save lives!



THANKS!

What questions do you have for us?

