Diagnosing Pneumonia From X-rays

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Problem Statement and Business Value

Can training a program to diagnose pneumonia be as good as a doctor?

Doctors diagnose by looking at images

By automating more and more processes for doctors, they can be focused on tasks that require a human.

Diagnosing pneumonia will no longer require a doctor and can be done by the x-ray technician right after the test

Methodology

A convolutional neural network was trained using x-ray images from patients with pneumonia

Network tries to find the differences between patients with and without pneumonia

Sick 

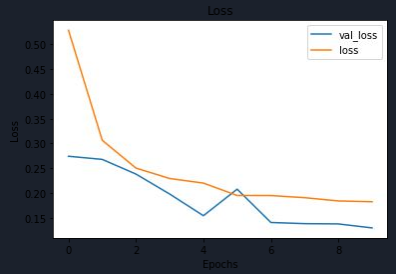
Healthy 

The white spaces here are typically used for diagnosis

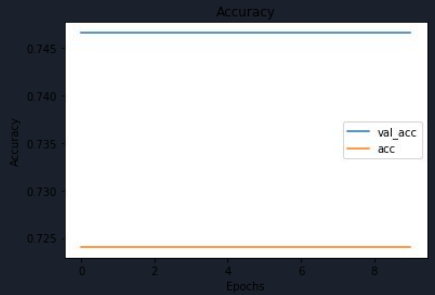
Results

Models gradually improved performance as layers were added.

Final model



74% accuracy



Recommendation

Until the accuracy becomes better, the diagnosis should still be confirmed by an actual doctor.

Sub 95% accuracy is not very convincing

Future Work

- Stronger computer
  - Allows larger images, the images used were incredibly downsized
  - Larger network
- Standardize the xrays a bit more
  - Not every x-ray was in the aspect ratio or position
  - Dataset had a mix of children and adults
- More training by the model

Thanks for your time!