IDENTIFYING PNEUMONIA IN CHEST X-RAYS

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AGENDA

01 BUSINESS PROBLEM

02 DATA & METHODS

03 RESULTS

04 CONCLUSIONS & NEXT STEPS

Business Problem

50,000 people in the US die from pneumonia each year. It is diagnosed through chest x-rays, which can sometimes be hard to accurately read with the human eye.

Goal

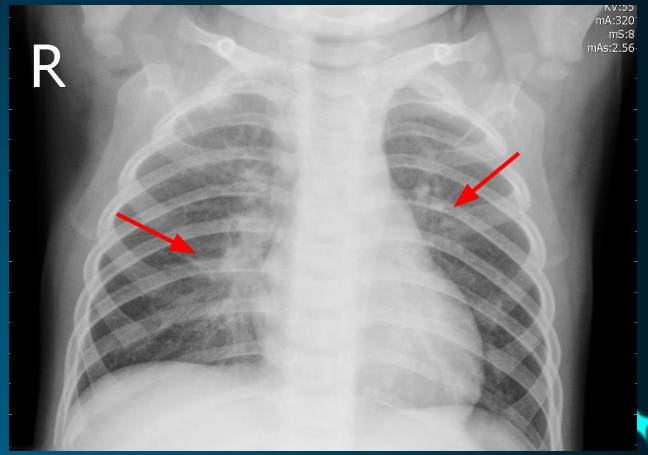
Create an image classifier using a neural network that can correctly identify pneumonia in chest x-rays

DATA

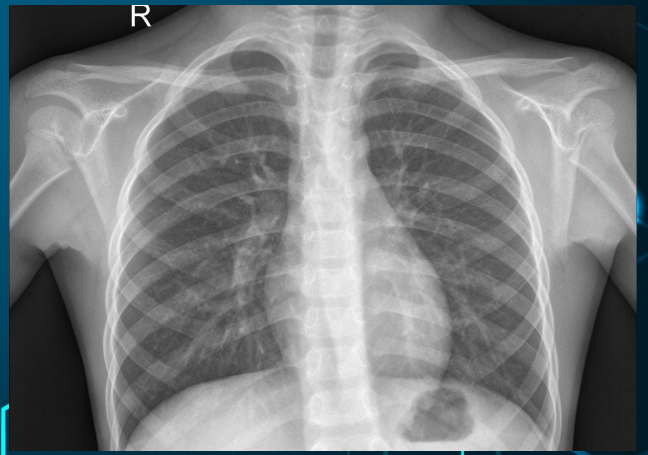
X-Ray Images

- 6,000 labeled images of patients with/without pneumonia
- 1,341 healthy, 3,875 pneumonia
- 64 x 64 image size
-

Pneumonia

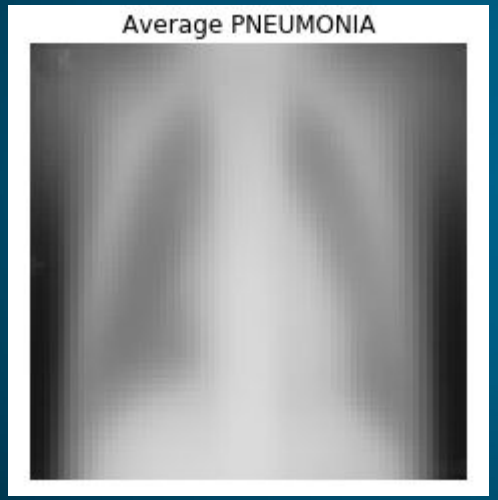


Normal

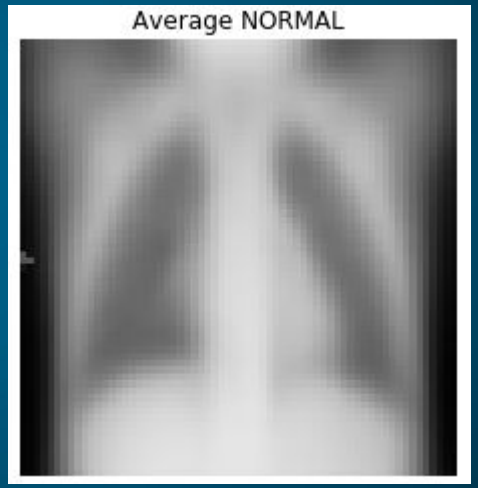


EDA

Pneumonia



Normal



METHODS

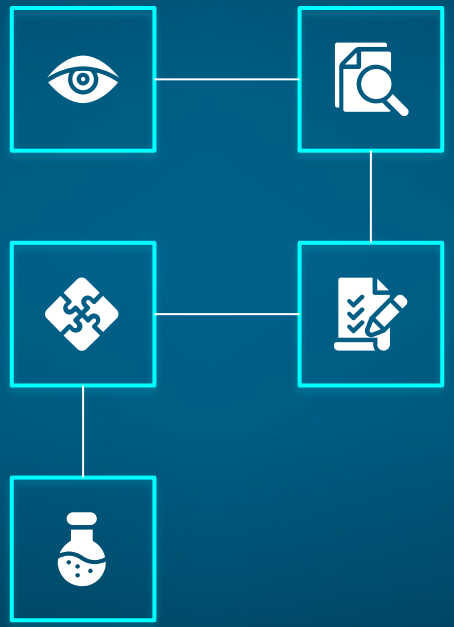
Data Collection

Data Preparation

Modeling

Exploratory Data Analysis

Evaluation



RESULTS

Final Model

Image Augmentation with rotation

4 Convolution Layers using relu activation

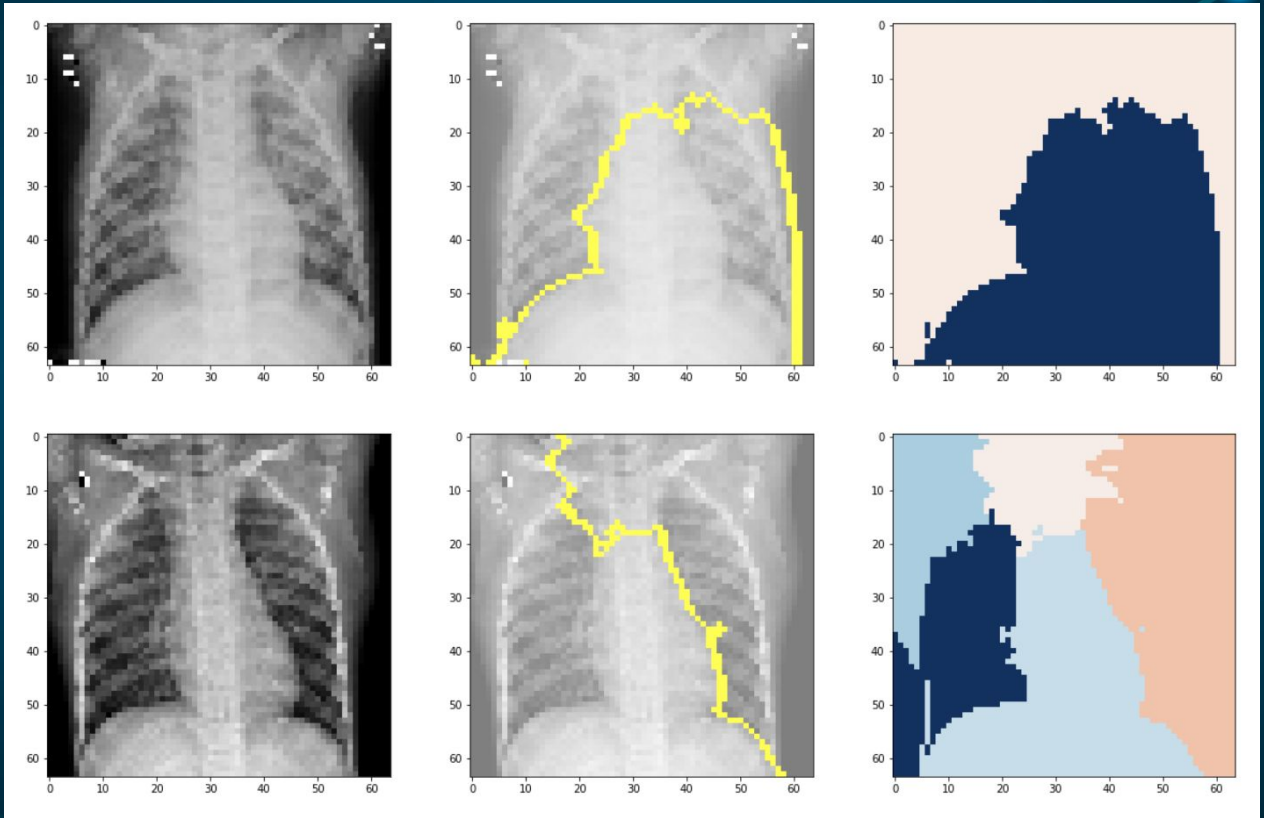
4 Dense Hidden Layers using relu activation

Output Layer using sigmoid activation

85.8%
Recall

90.0%
Accuracy

RESULTS



Confusion Matrix

Final Model Predictions on Test Set

		Predicted	
		Normal	Pneumonia
Actual	Normal	193	30
	Pneumonia	32	345

CONCLUSIONS

- 86% recall
- Further improvements
- More images
- Trying all model types and parameters

THANKS!

Questions?

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