



PNEUMONIA DIAGNOSIS



CHINYEMBA VICTOR

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AGENDA



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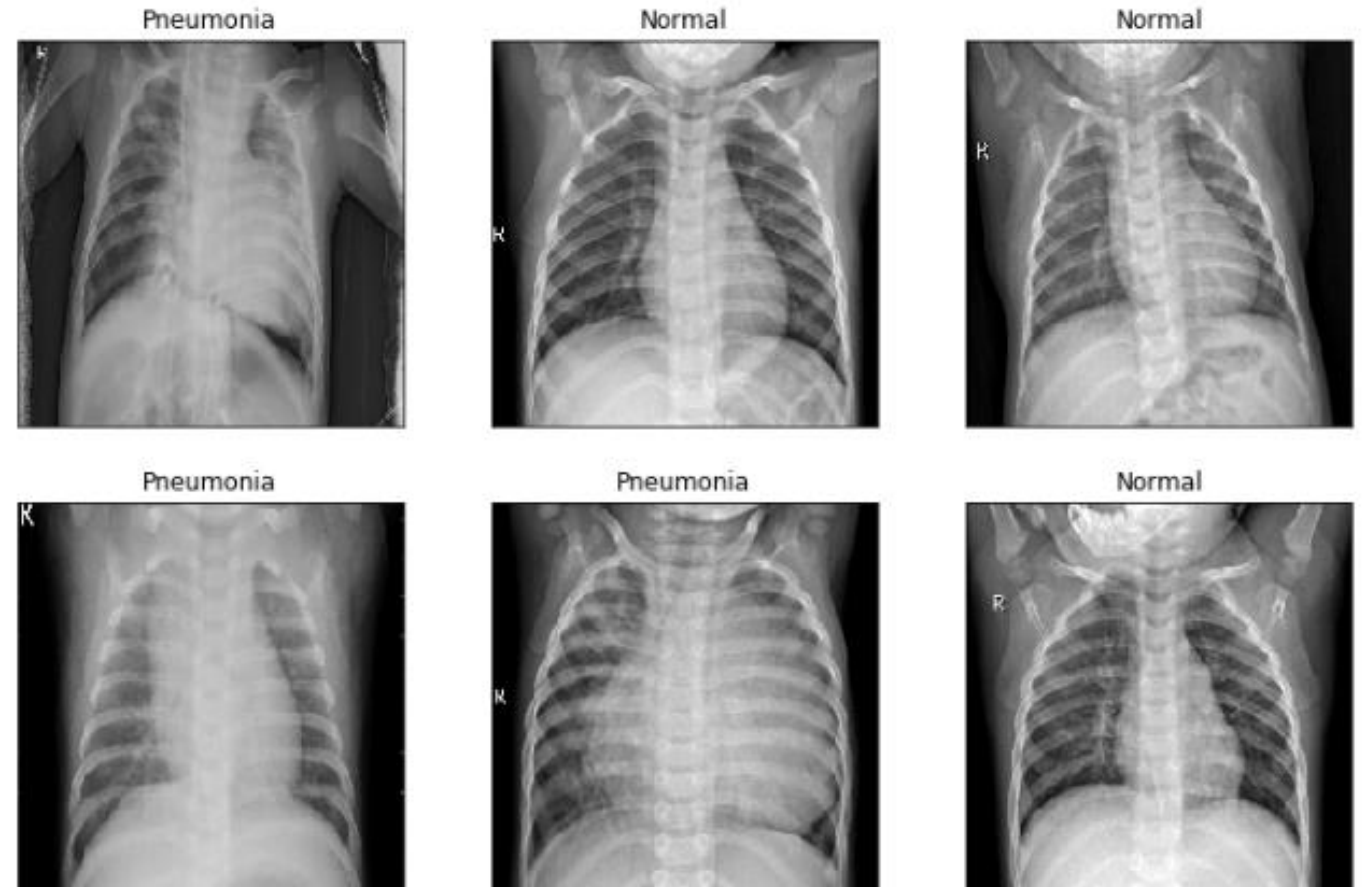
BUSINESS PROBLEM

- Misdiagnosis causes death or disability to over 150,000 patients annually in USA, *Passen & Powell [2020]*
- 2nd Most Misdiagnosed
- 1st congestive heart failure
- Missed treatment opportunity
- Medical negligence
- Possible lawsuits



DATA PREPARATION

- Data: X-Ray images of pneumonia and normal chests
- Training Dataset:
 - Pneumonia: 3,875
 - Normal: 1,341
- Test Dataset
 - Pneumonia: 390
 - Normal: 23
- Image Data Augmentation
 - managed to balance the dataset given the unbalanced data.



Xception: Pneumonia

- **Still being worked on**

PRETRAINED IMAGE CLASSIFICATION



XCEPTION

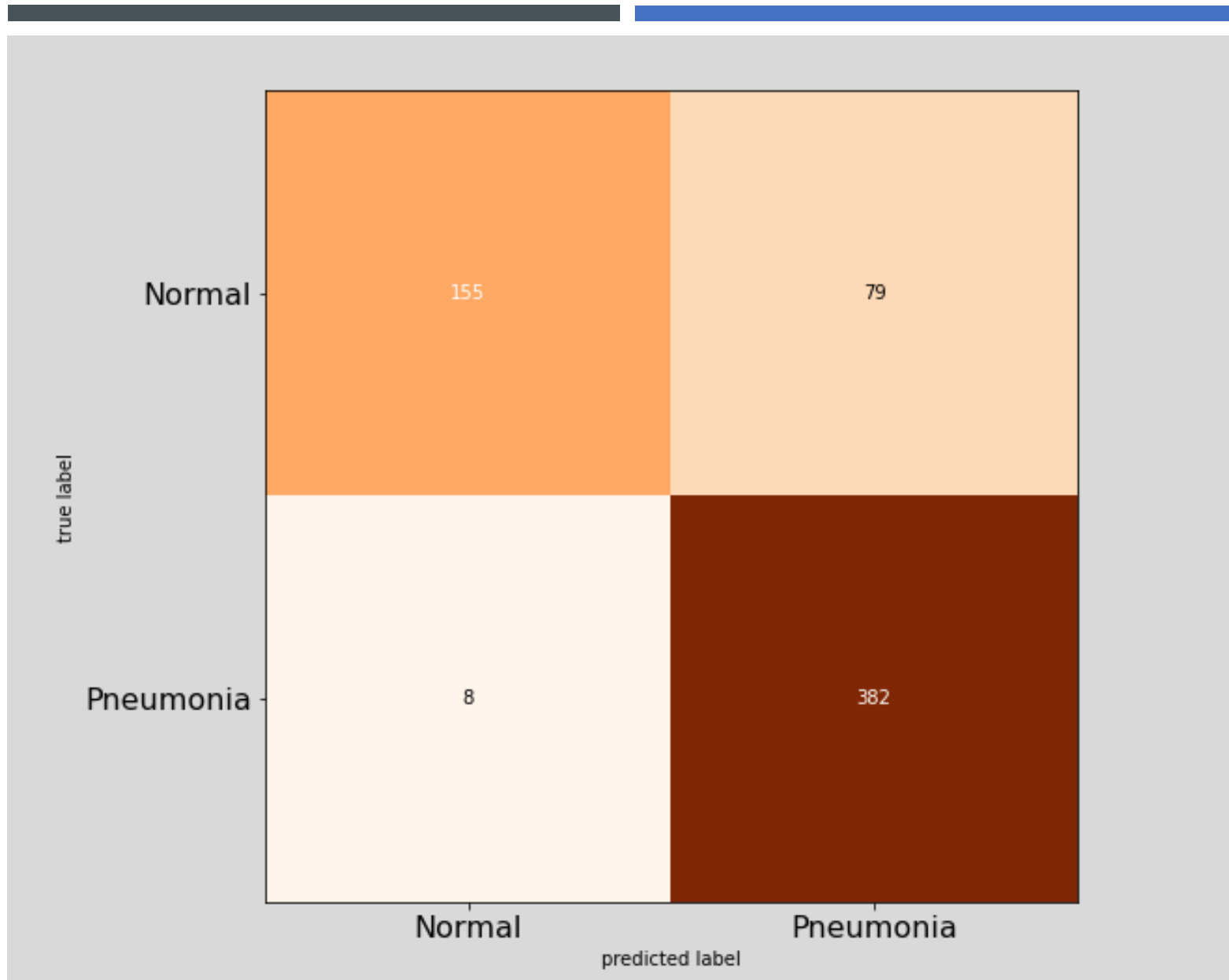
RESNET 50

ResNet50: Pneumonia

- **Precision:** 0.83
- **Recall:** 0.98
- **Test Accuracy:** 0.86
- **Validation:** 0.94



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SUMMARY

- Reduced a number of misdiagnosed cases
- Positive misdiagnoses are more (79), negative (8).
- Resnet worked, Xception timed-out
- Accuracy: 98%





NEXT

- Second check implemented.
- Fine tune, but be careful to not overfit.
- Discussion of findings with the medical experts.
- Train alternative models and compare results
- Requirements
- Actual implementation





THANK YOU!

ANY QUESTIONS, COMMENTS