Pediatric Pneumonia Clasification

UTILIZING X-RAY DATA

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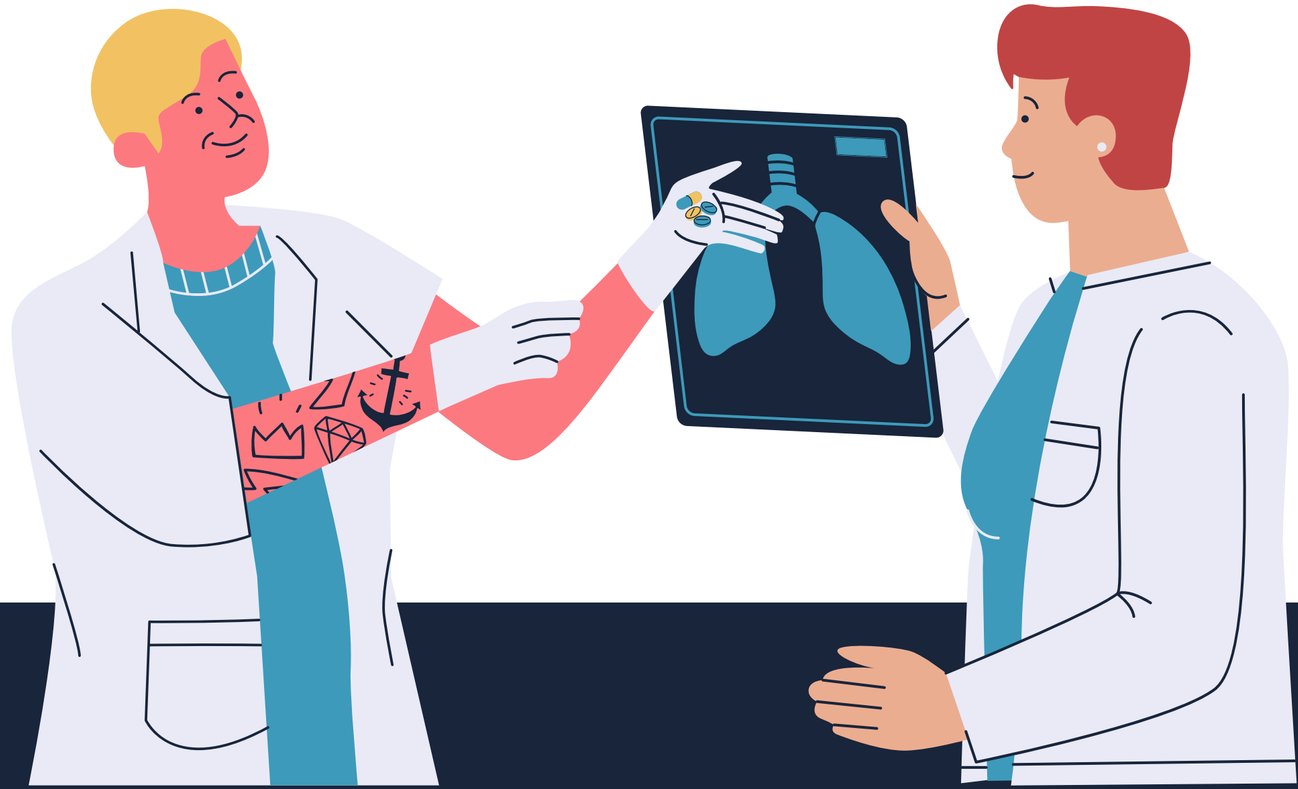
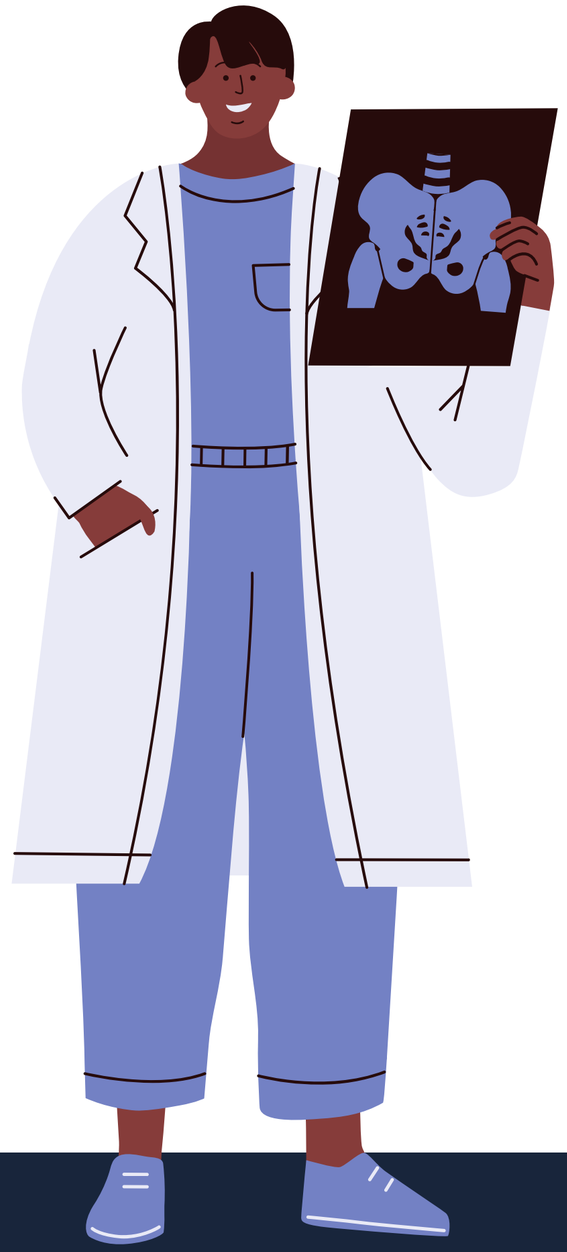


Agenda



- Summary
- Business Problem
- Data
- Methods
- Graphics
- Results
- Next Steps

Summary

- AI technology has left an indelible impact on the world, from Chat GPT and NLP to Spotify and Netflix and their recommendation systems.
- In the field of diagnostics and medicine, x-ray classification, AI modeling can streamline the diagnoses of many ailments and, on a deeper level, identify critical features necessary for diagnosis that may not be distinguishable by the human eye.

Business Problem

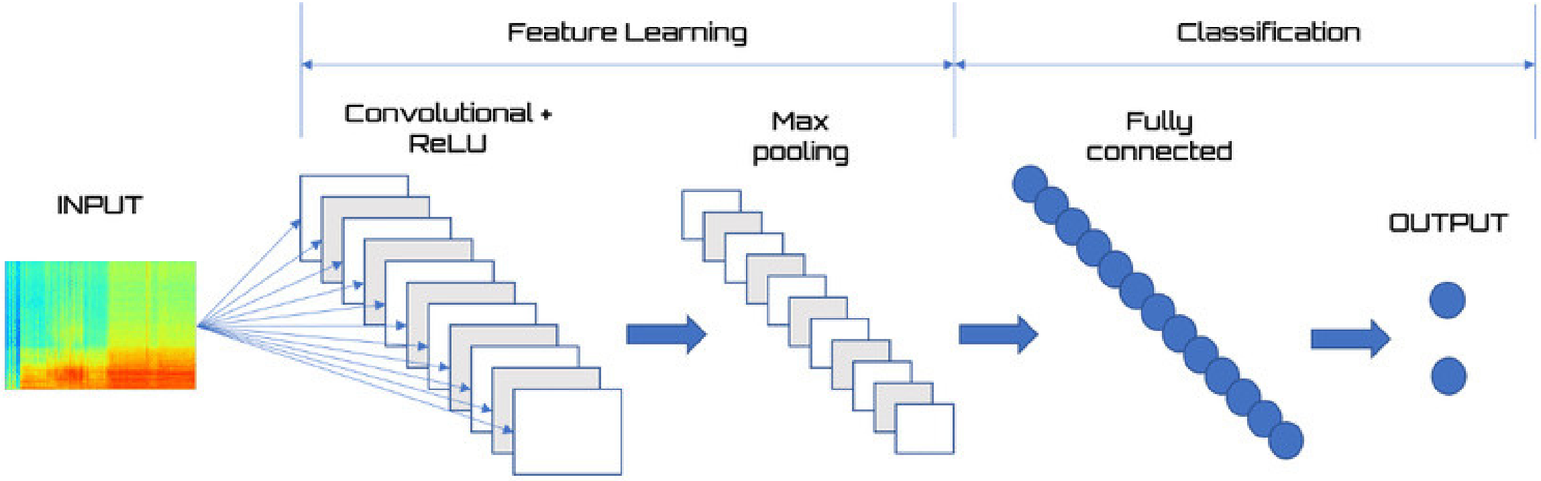
- Childhood Pneumonia claims the lives of more than 725,000 children annually.
- Due to the lack of proper healthcare and reliable diagnostic methods this issue still remains a problem.

Data

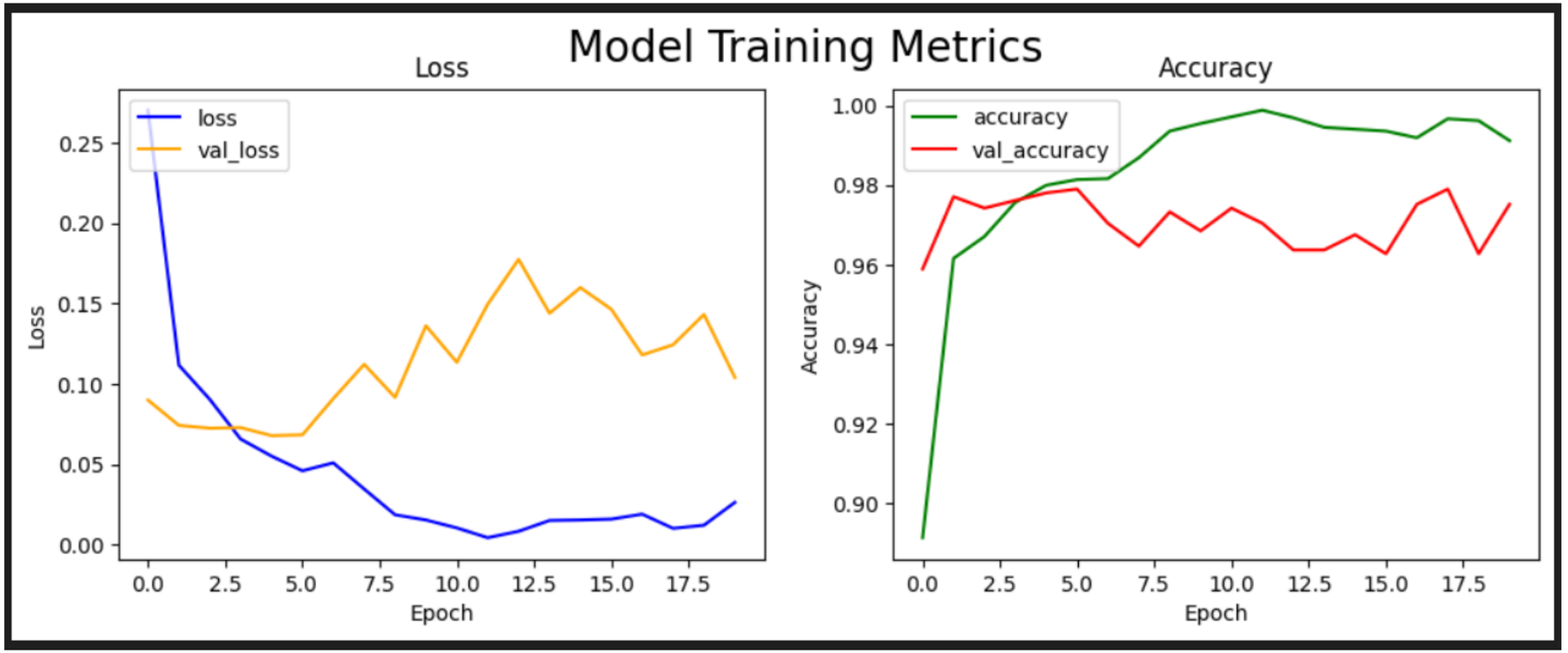
- Acquired from Mendeley Data
- Data sourced from Guangzhou Women & Children’s Medical Center
- 5,856 pediatric x-ray images with and without pneumonia
- Minor preprocessing needed

Methods

CNN


Feature Learning
Classification
Convolutional + ReLU
Max pooling
Fully connected
INPUT
OUTPUT

Graphics



Final Training/Validation Accuracy
Training Accuracy: 99%
Validation Accuracy: 98%

Final Training/Validation Loss
Training Loss: 0.026
Validation Loss: 0.010

Results

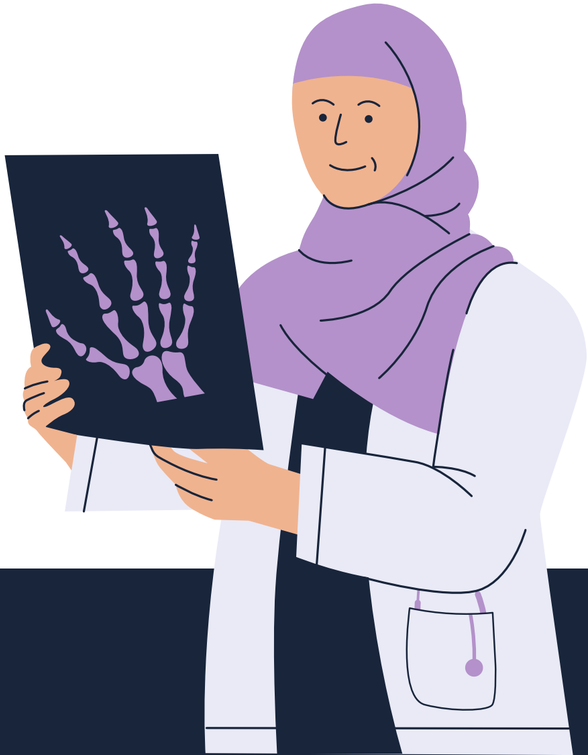
82%

ACCURACY ON TESTING DATA

Low accuracy score in comparison to that of the validation may indicate improper class labels in test set

Next Steps

- Further Tuning to get a better-fit model with a higher accuracy score
- Seeing if this model would be just as effective using more generalized pneumonia X-ray scans
- Utilize different measurement to determine efficacy of my model (F1 score)



Thank you!

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