Detecting Pneumonia in X-Ray Scans

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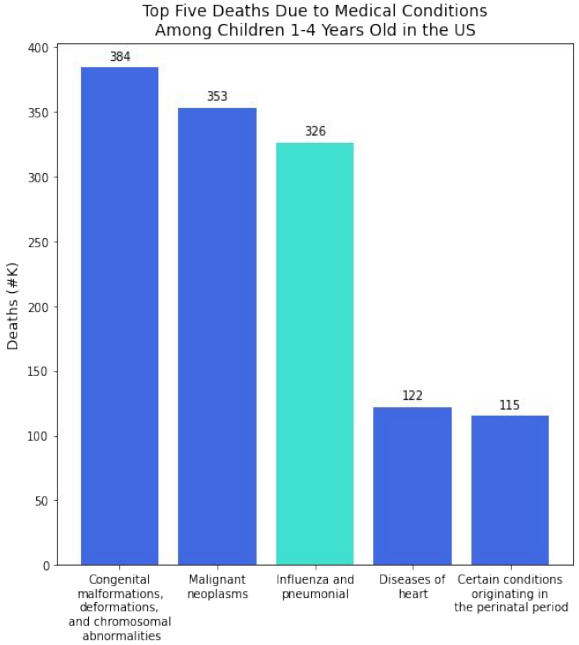
Agenda

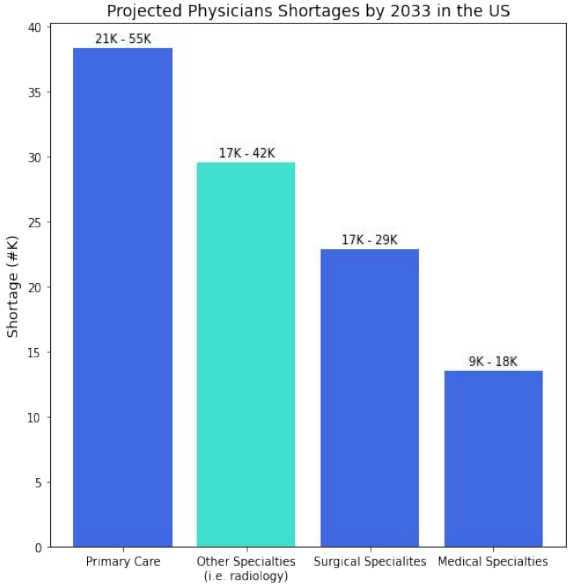
- Business Problem
- Data
- Model
- Results

1 | Business Problem

Business Problem

- How can we effectively and accurately diagnose pneumonia from chest X-ray scans of children?



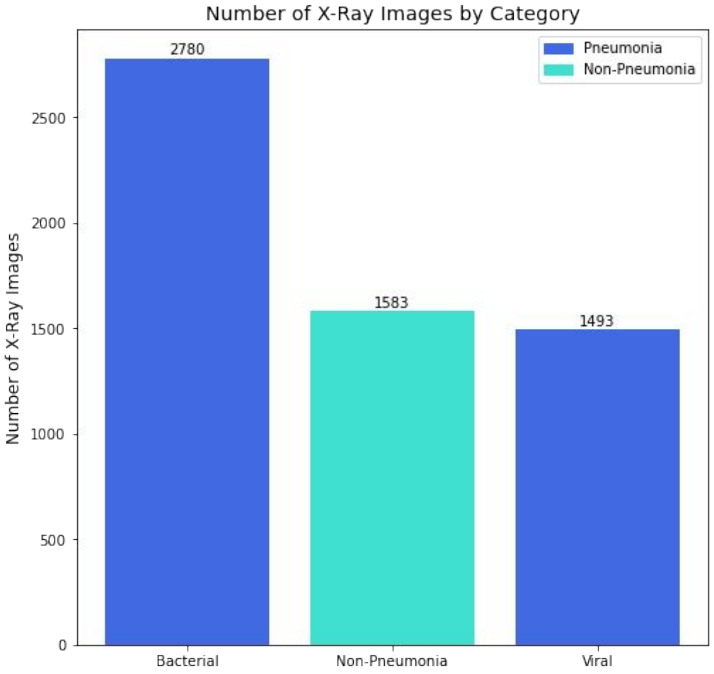


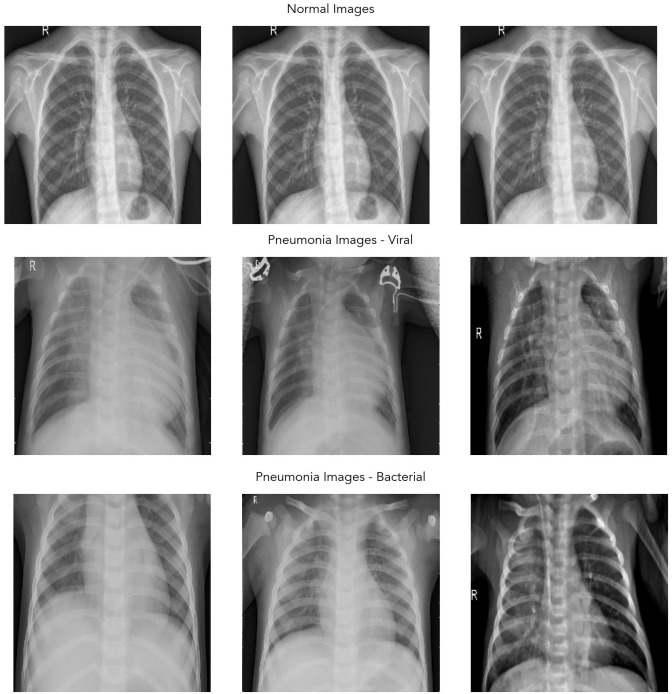
Source: CDC, Association of American Medical Colleges (AAMC)

2 | Databases

Dataset used:

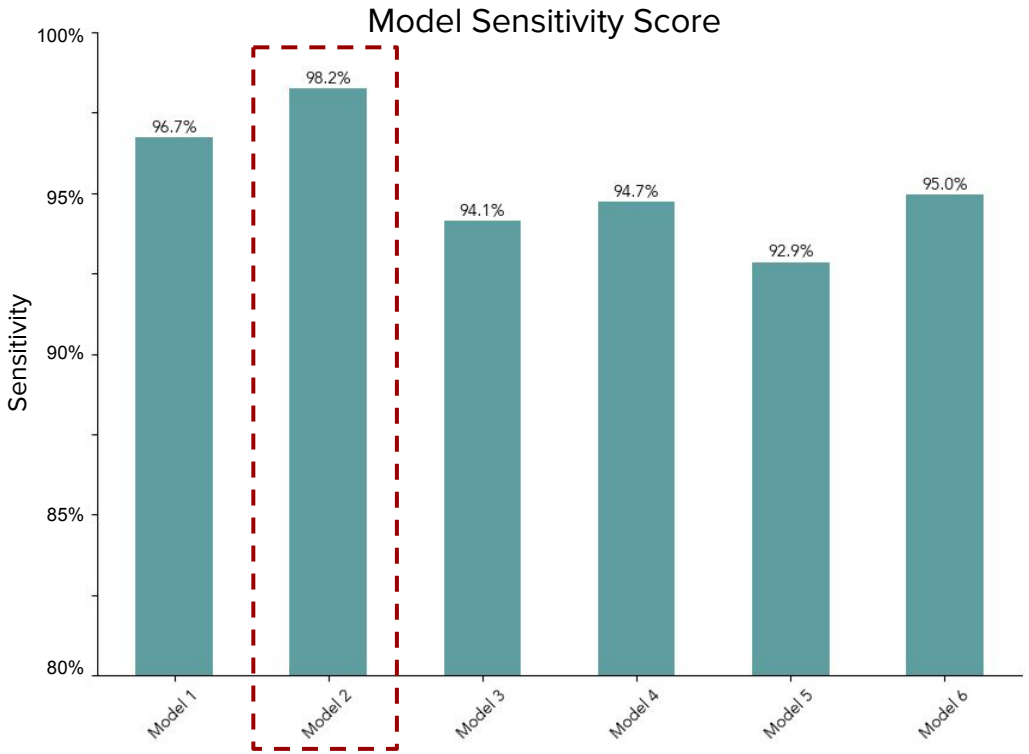
5.8K chest X-rays from pediatric patients (ages 1-4)





3 | Modeling

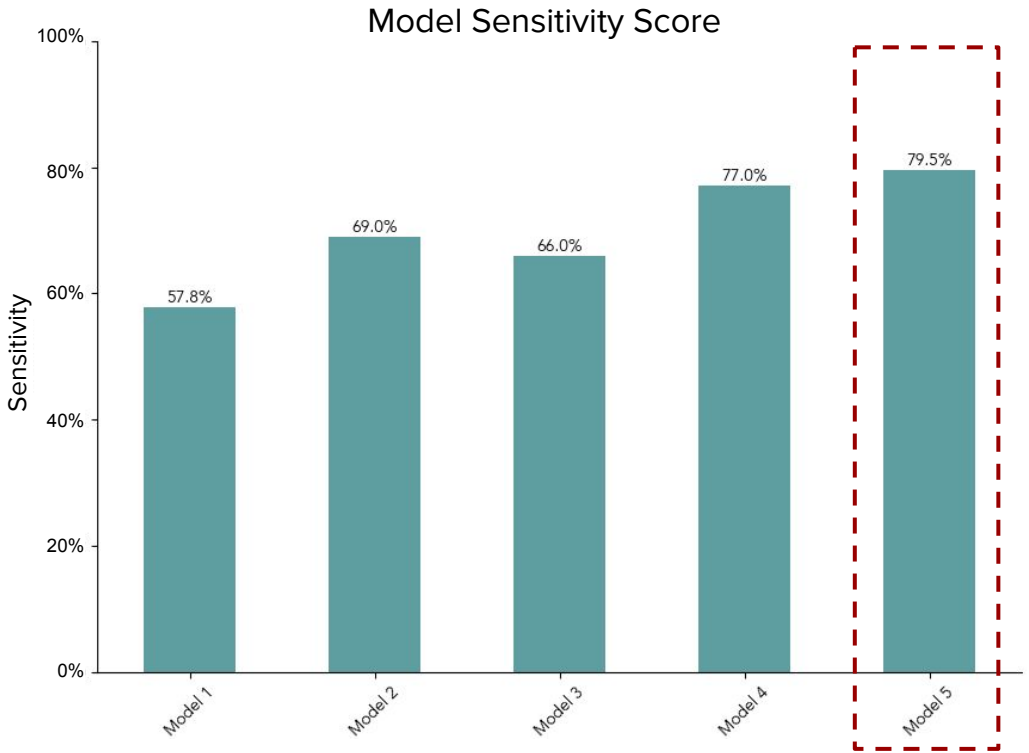
The best model to classify pneumonia vs non-pneumonia had a sensitivity of 98%



Model 2:

- Sensitivity: 98%

The best model to classify bacterial pneumonia, viral pneumonia, and non-pneumonia had a sensitivity of approximately 80%



Model 5:

- Sensitivity: 80%

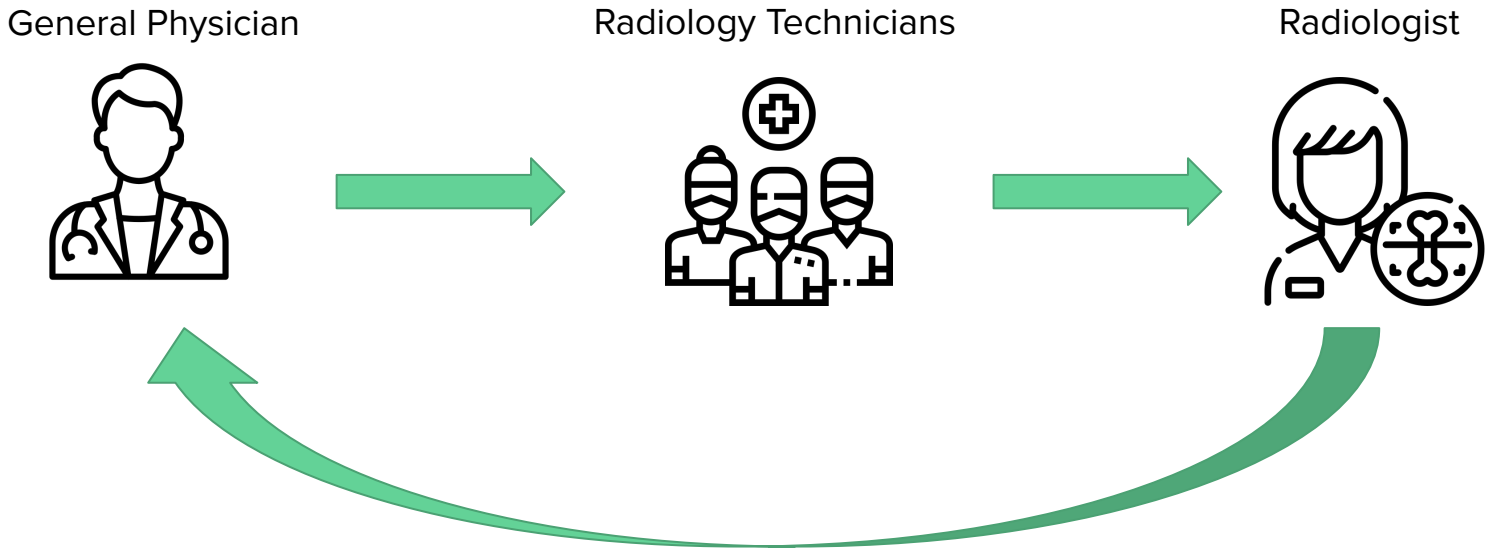
4 | Conclusion

Summary

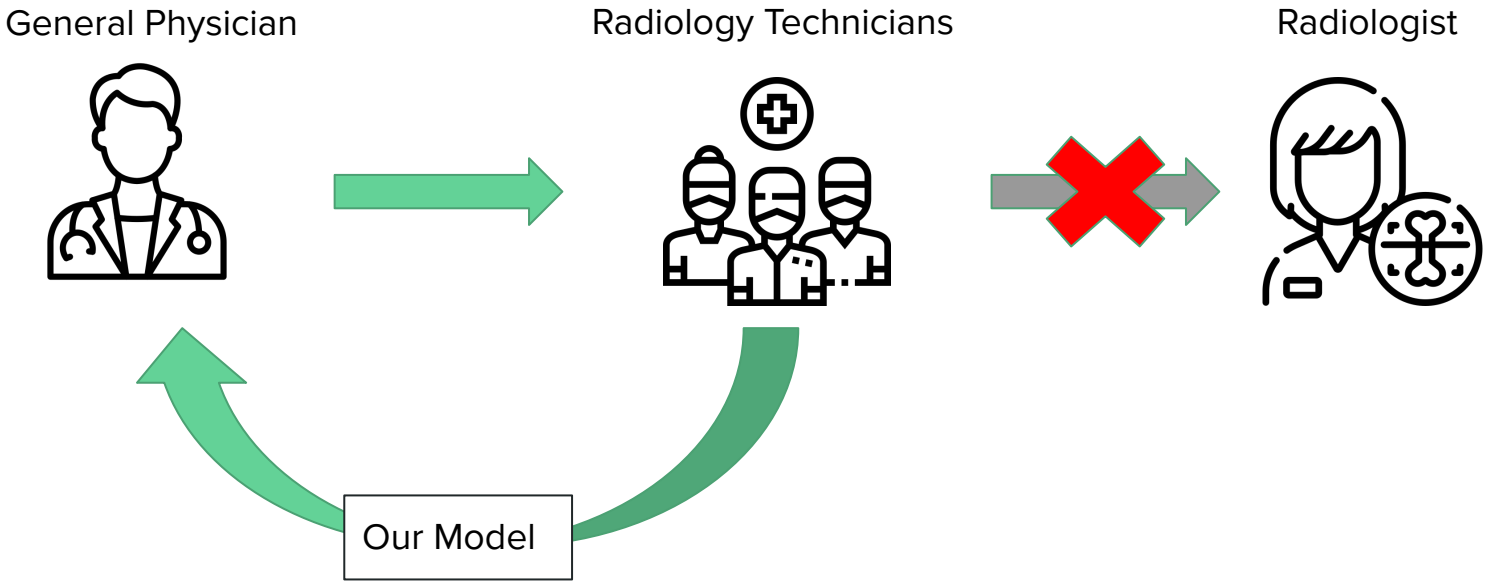
Pneumonia vs Non-Pneumonia Sensitivity: 98%

Bacterial Pneumonia vs Viral Pneumonia vs Non-Pneumonia Sensitivity: 80%

Current Workflow



New Workflow with Model



Next Steps...

- Investigate if diagnosing pneumonia through our model will be reimbursed by insurance companies
- Run the models with images of other disorders
- Apply the model for X-ray images of other age groups, especially for 65+

Thank you!
Any questions?

GitHub Repository: https://github.com/arthurk2323/pneumonia_x-ray_classification

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