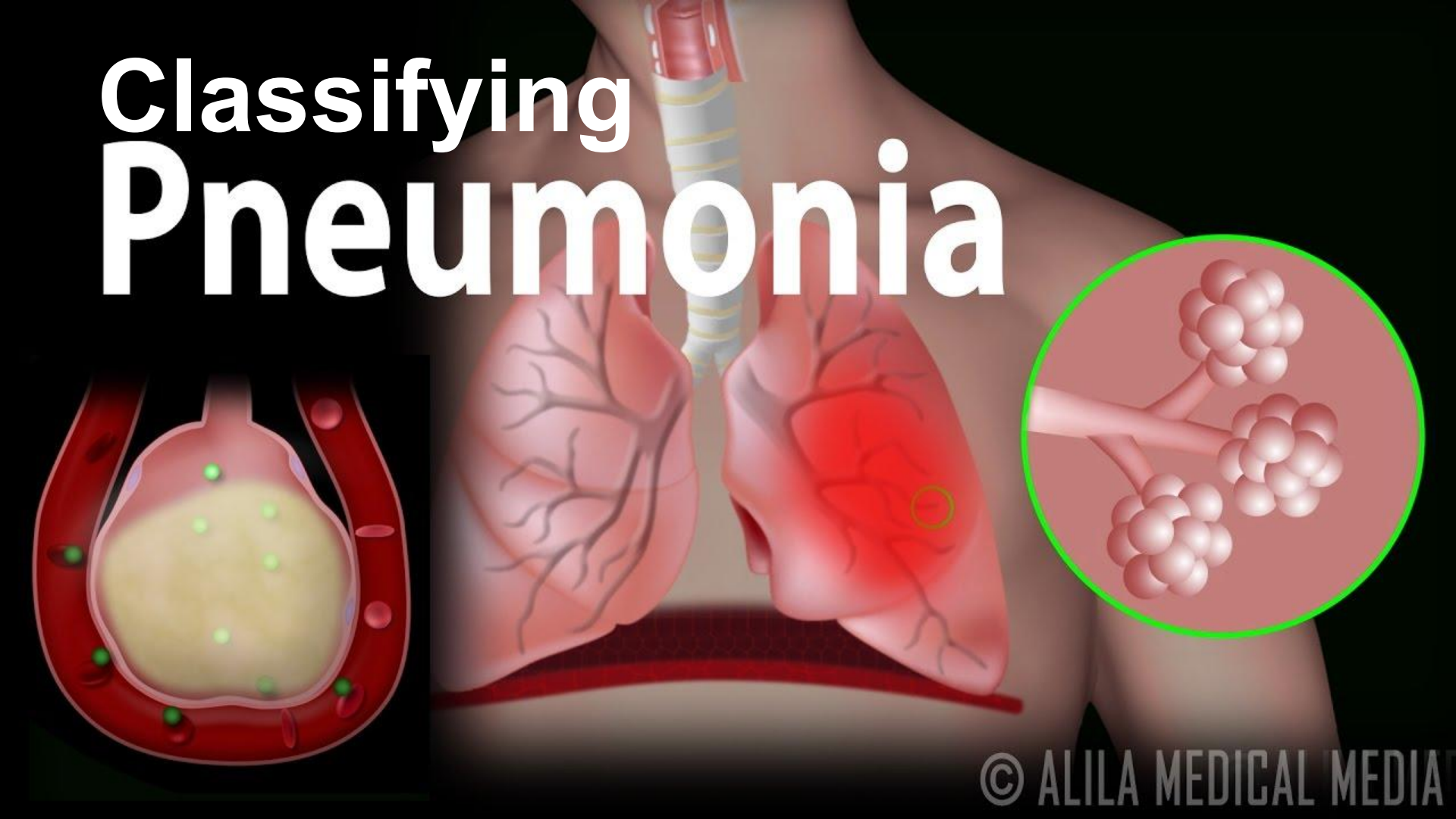
Classifying Pneumonia



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Meet the Team

Noble Tang

Data Scientist

Michael Lee

Data Scientist

Jakub Rybicki

Data Scientist

Not just a bad cough

2 million children deaths every year

Fever

Chest Pains

Deadly

Coughing Blood

Agenda

1. Business Understanding
2. Data Understanding and Preparation
3. Modeling
4. Evaluation
5. Proposal
6. Future Investigations

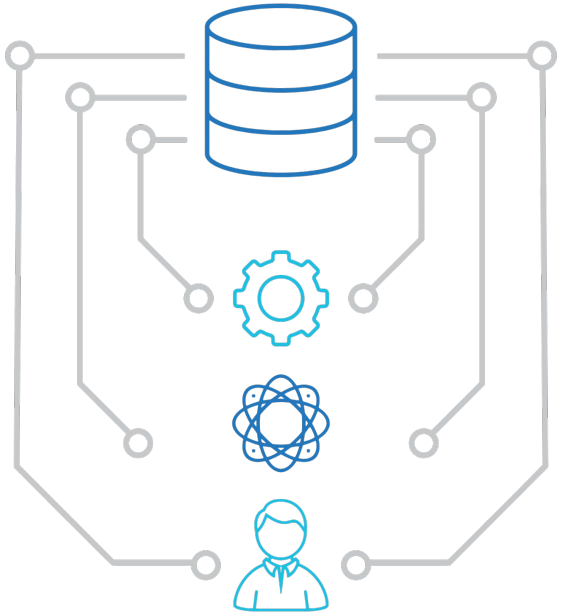
Business Understanding

Doctors have many methods to determine pneumonia

- Leading cause of childhood mortality
- Use model as an prioritization system

79% Accuracy

Data Understanding and Preparation



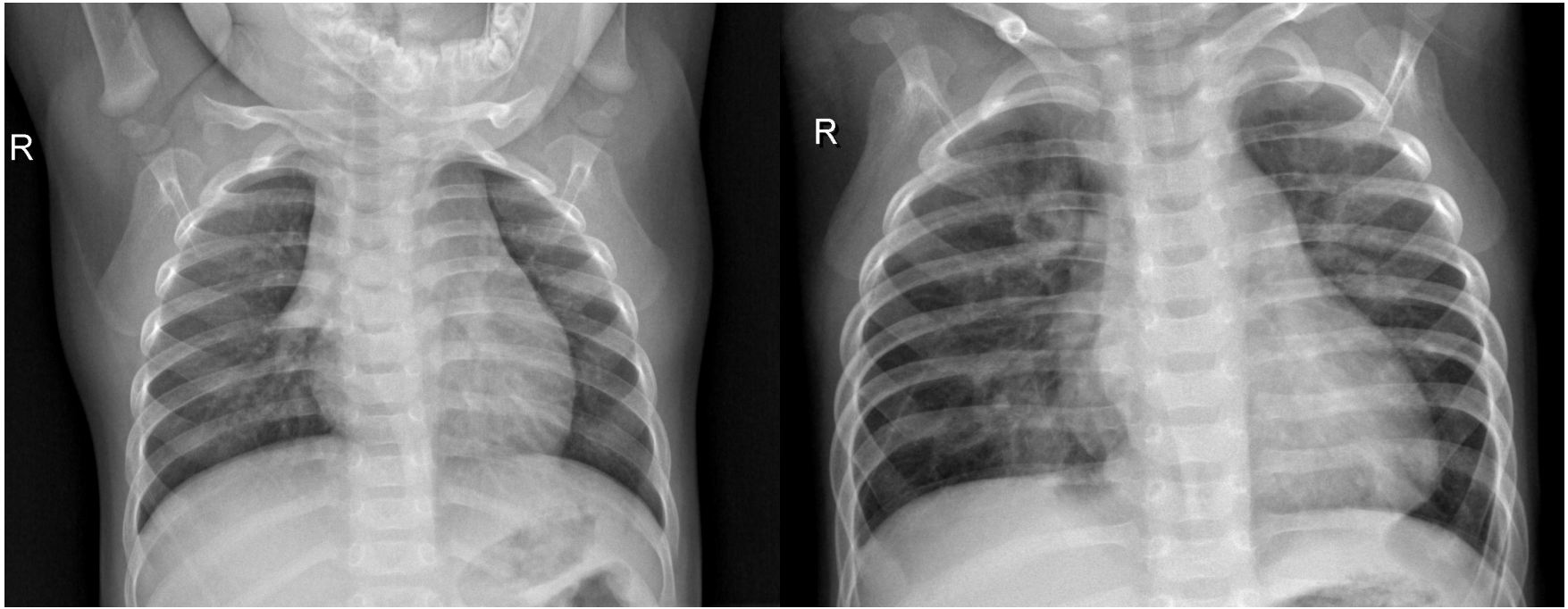
Pneumonia affects thousands of children

- Guangzhou Medical Center
- 5856 Chest X-rays
- Pediatric Patients (1-5 years old)

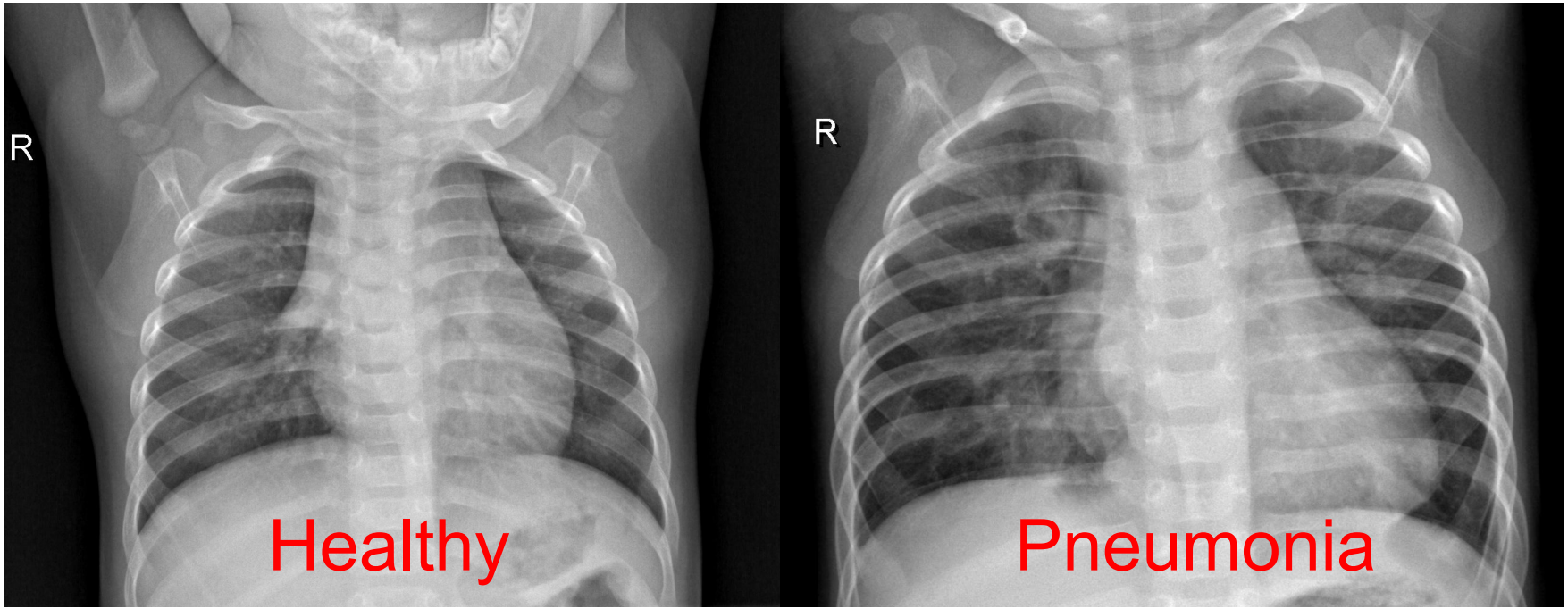
Model trained using x-ray images

- Pneumonia vs Normal
- Validated by expert physicians
- Transparent / non-black box model

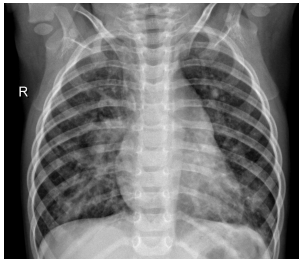
Can You Spot The Difference?

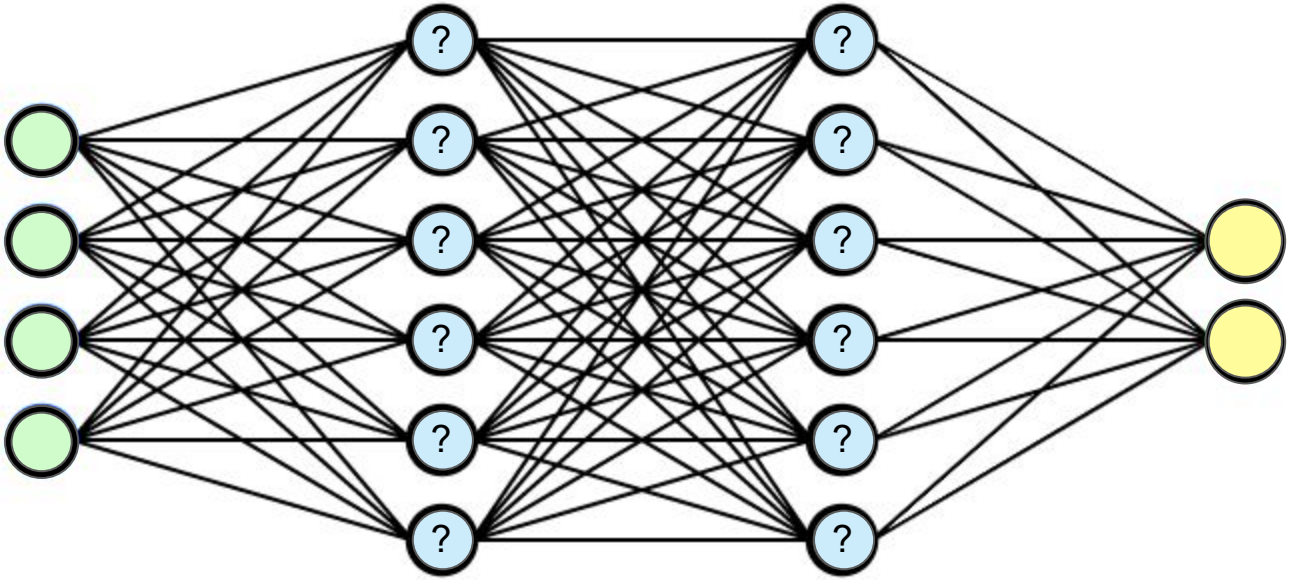


Difficult With Untrained Eye



Modeling

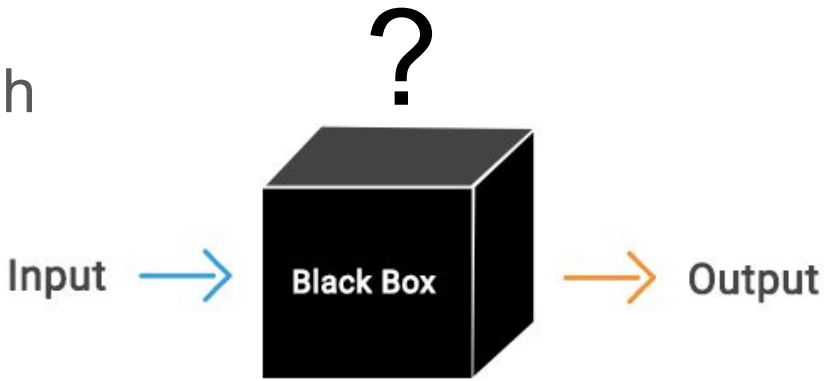




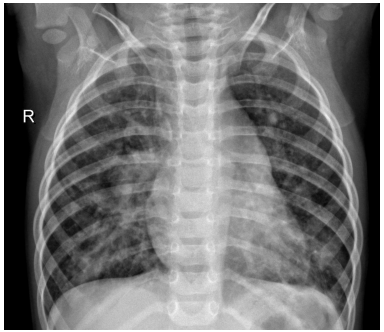
True
or
False

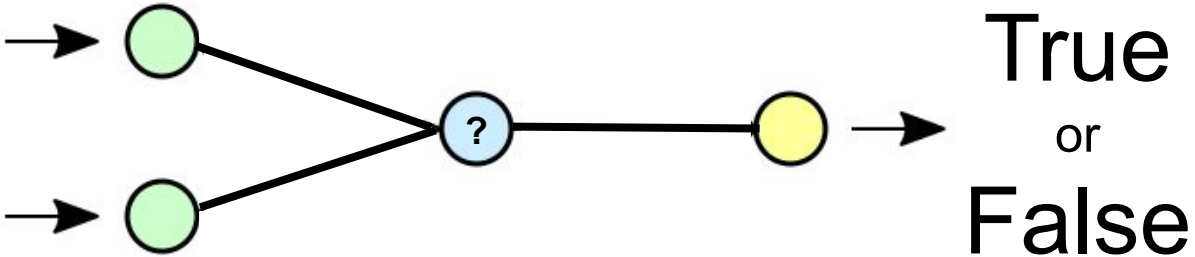
Multiple models were considered

- Varying Levels of Complexity
- Hidden Computations
- Improve parameters through Trial and Error
- Comparable Results



Simplest Model





Evaluation

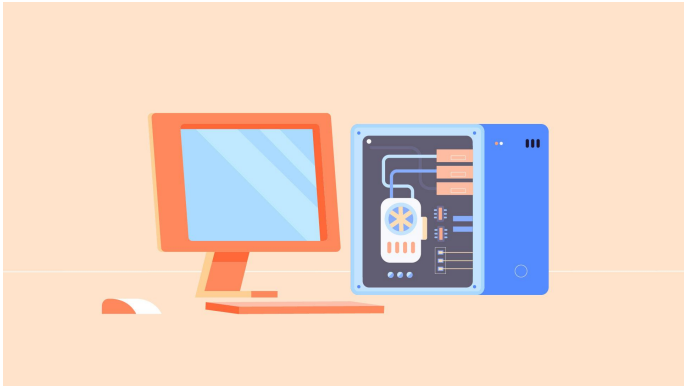
Evaluation

- Produced true and false results
- Focused on maximizing accuracy
- Simple and transparent is better

Proposal
&
Key Takeaways

Model ≠ Doctor's Diagnosis

- 79% Accuracy Rate
- Expediting diagnosis and referrals



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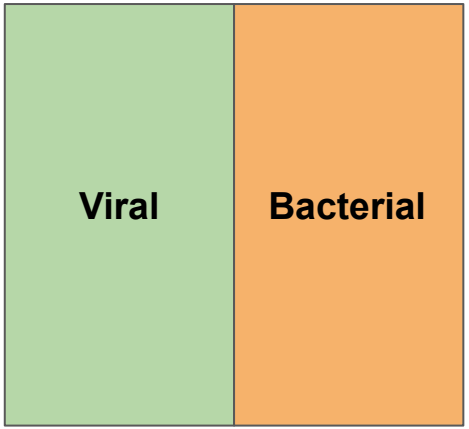
Future Research

Improving Our Model

Pre-Existing Condition



Classifying Pneumonia Types

More Variety Age & Location

Thank You

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Questions?