

Pediatric Pneumonia Identification Using Deep Learning

By Adam Pell

Outline

- Overview
- Data Understanding
- Methodology
- Results
- Conclusion



Overview

This project uses deep learning techniques to help physicians detect pneumonia in chest X-rays.

Recommendations:

- **Supervised clinical use**
- **Academic use**
- **Second opinion for suspected illness**



Data Understanding

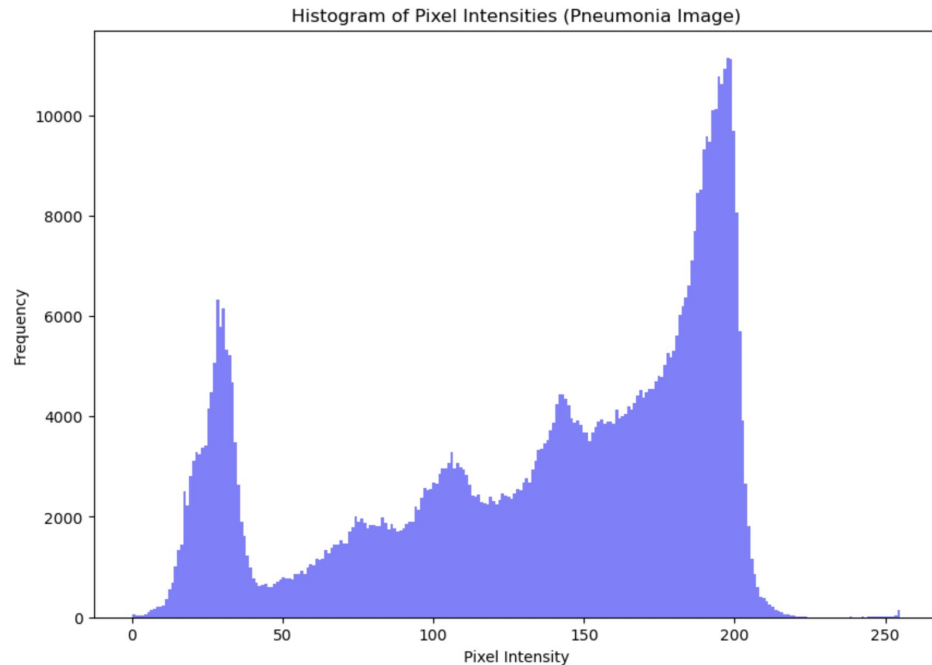
Pediatric chest X-Rays from hospital in Guangzhou, China:



Image Credit: [Cell.com](https://www.cell.com)

Methodology

- Deep learning
- Iterative modeling
- Transfer learning



Final Model Key Trends



The image features three stylized, house-shaped blocks arranged horizontally. Each block has a white outline and a flat top. The first block is light pink and contains the text 'Optimized Performance'. The second block is a medium pink and contains the text 'Low False Positives'. The third block is a dark maroon and contains the text 'Short Training Time'. Below these three blocks, there is a decorative horizontal bar composed of three segments in the same color scheme (light pink, medium pink, and dark maroon) that tapers to a point on the right side. The entire graphic is set against a white background with a dark blue footer bar at the bottom.

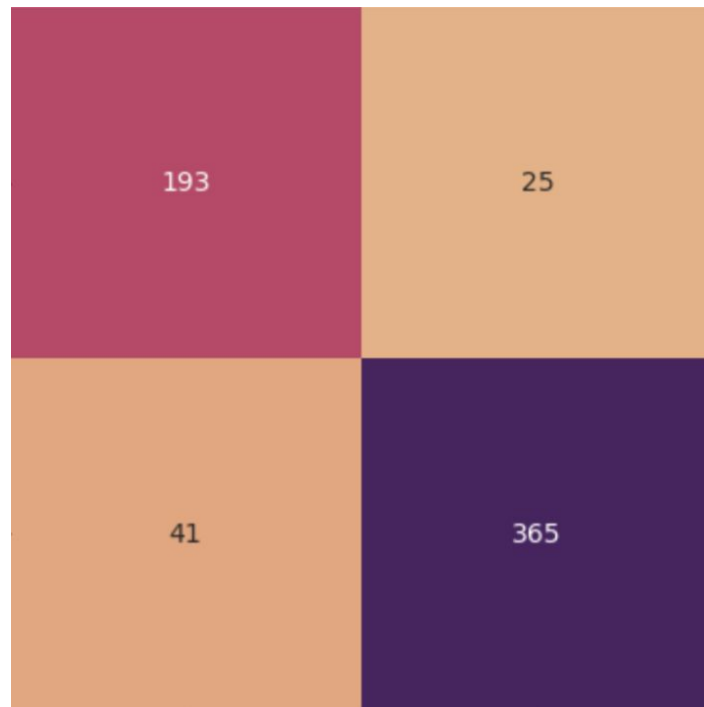
**Optimized
Performance**

**Low False
Positives**

**Short
Training Time**

Final Model Results

- Negative Case (no illness)
 - 18% error
- Positive Case (illness)
 - 6% error



Conclusions

Limited Clinical Use
with Supervision

Solid Accuracy

Further testing could
inform future changes

Academic Use

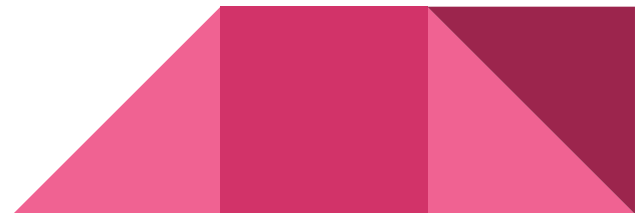
Vital training tool

Quick and efficient
evaluation

Second Opinion

For suspected
positives

Rapid confirmation



Next Steps

- More data
- More complex models
- Image augmentation
- Explainability



Thank You!!

- **Email:** apell7591@gmail.com
- Github: [@apell74](#)
- **LinkedIn:** [Adam Pell](#)
- **Sources**
 - [Identifying Medical Diagnoses and Treatable Diseases by Image-Based Deep Learning](#)

