

Pediatric Pneumonia Identification Using Deep Learning

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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

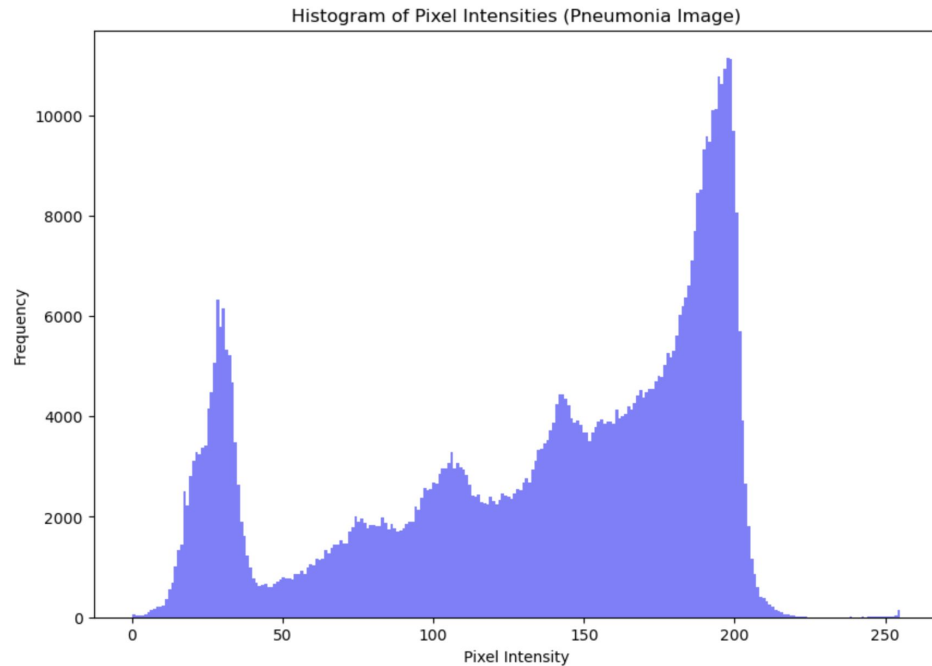
Pediatric chest X-Rays from hospital in Guangzhou, China:



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

Methodology

- Deep learning
- Iterative modeling
- Transfer learning



Final Model Key Trends



The diagram consists of three adjacent, house-shaped blocks with a dark blue base. 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 pink and contains the text 'Short Training Time'. Below these three blocks, there is a decorative row of three triangles in the same color gradient (light pink, medium pink, dark pink) that tapers off to the right.

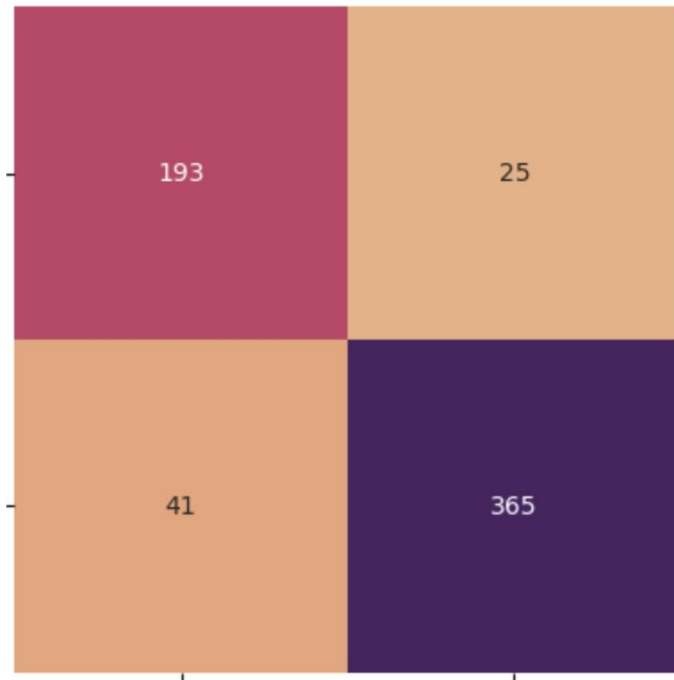
**Optimized
Performance**

**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

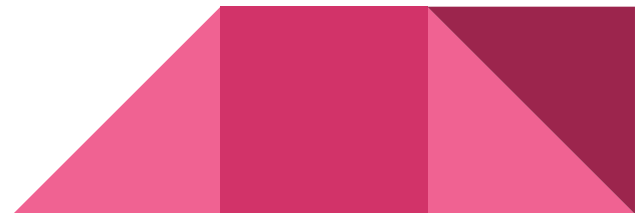
Vital training tool

Quick and efficient
evaluation

Second Opinion

For suspected
positives

Rapid confirmation



Next Steps

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



Thank You!!

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- **Sources**
 - [Identifying Medical Diagnoses and Treatable Diseases by Image-Based Deep Learning](#)

