



[X-RayShield Diagnostic Assistant]

[BRISTI HADLER]

[Rajiv Gandhi Institute of Petroleum Technology]

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Rules & Regulations: Final Presentation Round

Please make a copy of this presentation and share it with the Girl Hackathon Program Team

- Do not exceed 8 slides.
- Do not copy any materials available on the web. If discovered, you will be disqualified.
- Be mindful of images or videos that have an existing copyright.
- Time limit is 7 minutes for presentation & 3-4 mins for Q&A with the judge panel. Do not exceed the time limit.
- Make sure to add your working prototype/working demo which needs to be submitted in advance

Slide 1:

PROBLEM STATEMENT:

- Chest X-rays are essential for diagnosing various diseases like pneumonia, COVID-19, and more.
- Manual diagnosis is time-consuming, subjective, and prone to human errors.

Motivation:

- Our goal is to develop a reliable, fast, and efficient AI-driven tool to assist healthcare professionals.
- Enhance diagnostic accuracy and accessibility, especially in resource-constrained areas.





Slide 2:

Objectives:

- **Enhance Diagnostic Accuracy:**
Using AI to improve the accuracy of medical diagnoses.
- **Streamline Diagnostic Process:**
Reducing the time required for image analysis.
- **Improve Patient Care:**
Enhancing patient outcomes through timely and accurate diagnoses.

Slide 3:

Unique Features:

-  Multi-Disease Detection: Normal, Pneumonia, COVID-19.
-  Interactive Grad-CAM Heatmap: Visualize AI focus areas.
-  Enhanced Image Processing: Improved contrast for better visibility.
-  Comprehensive Report Generation: Downloadable PDF with analysis.

Slide 4:

Technical Approach & Model Design

Model Used: ResNet-50 (Modified for 3-Class Classification).

Preprocessing Steps:

- Resizing, enhancement via contrast improvement.

Explainable AI:

- Grad-CAM technique to highlight areas of interest.

Prediction:

- Outputs probabilities for: NORMAL, PNEUMONIA, COVID-19.
- Generates confidence charts for better understanding.

Slide 5:

System Workflow & User Interface

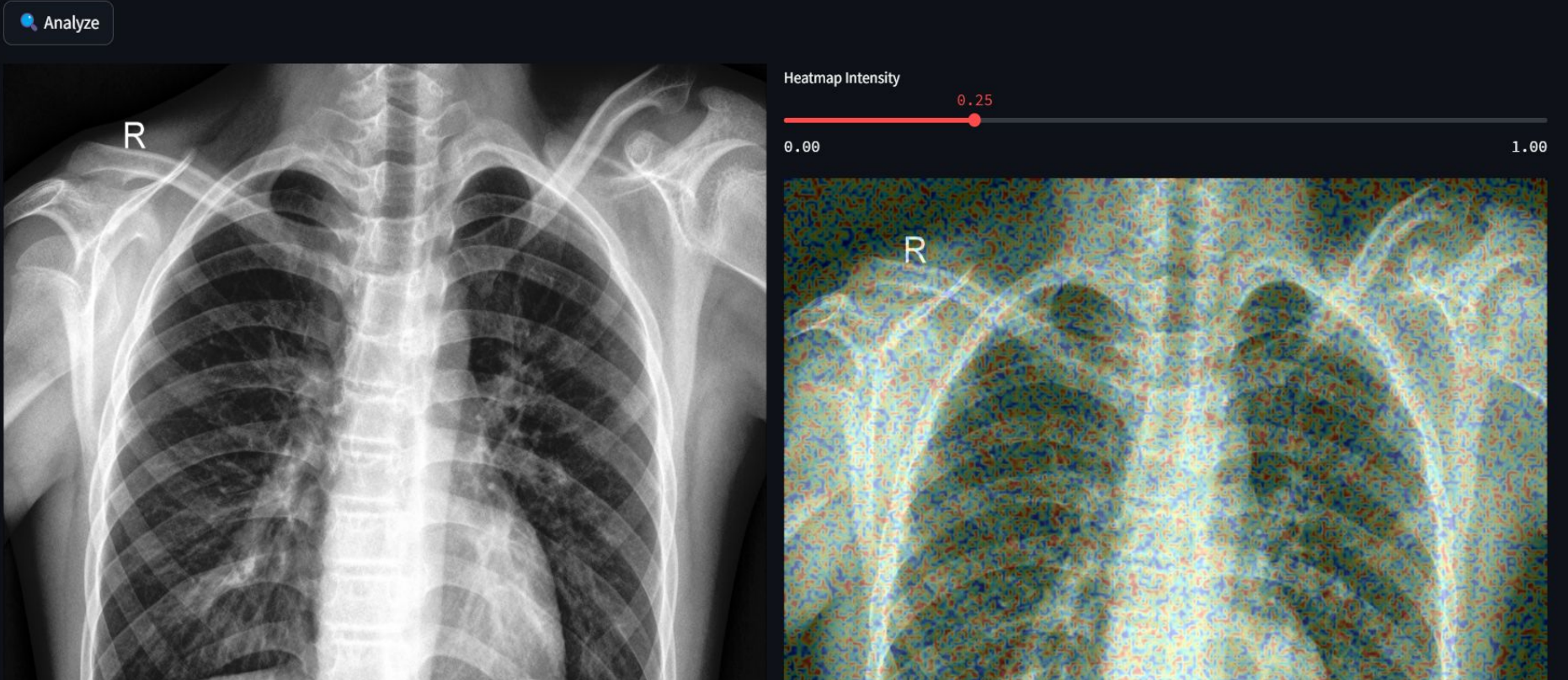
User Interface:

- Upload Image(s)
- Analyze & Predict
- Visualize Heatmaps & Confidence Scores
- Generate & Download Reports

Workflow:

1. Upload Image → 2. Preprocessing → 3. Prediction → 4. Visualization → 5. Report Generation

Slide 6: The Model



Slide 7:

Future Plans and Scalability

- **Expansion to Other Diseases:**

We plan to expand our tool to diagnose a broader range of conditions, including cardiovascular diseases and cancers.

- **Integration with EHR Systems:**

Integration with electronic health records (EHR) systems will streamline data access and enhance workflow efficiency.

- **Collaboration Opportunities:**

Inviting healthcare institutions and researchers to collaborate on further development and validation of X-RayShield.

Slide 8:

Conclusion

X-RayShield is a diagnostic assistant that leverages AI to enhance the accuracy and efficiency of medical diagnoses.

By providing a reliable, fast, and efficient tool for healthcare professionals, we aim to improve patient care and outcomes.

Its interactive visualizations, confidence scoring, and comprehensive reporting aim to empower healthcare professionals with deeper insights and more reliable assessments, ultimately improving patient outcomes.

Project Resources:

- Working Demo/Prototype Links (Mp4 format)
<https://youtu.be/U7jjqpjVGVo>
- Any additional resources
<https://github.com/bristiHalder/X-RayShield-Diagnostic-assistant>

Thank you

