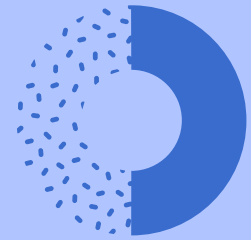
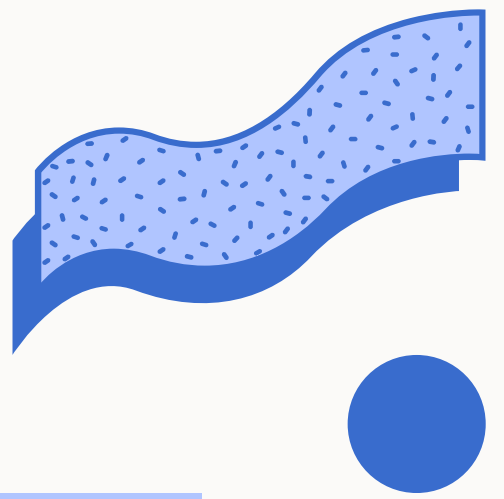


By Adnan Kibe Gitonga

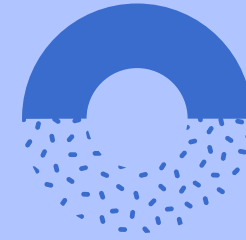
IMAGE CLASSIFICATION FOR SERENITY HEALTH CENTER



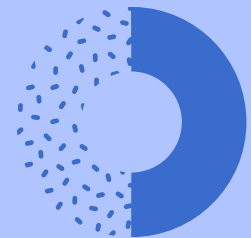
Content



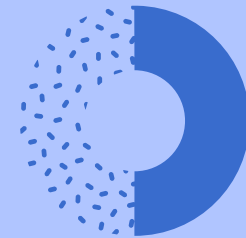
Overview



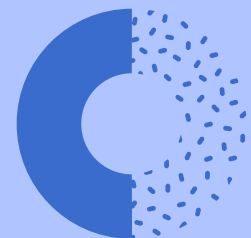
Goals & Objectives



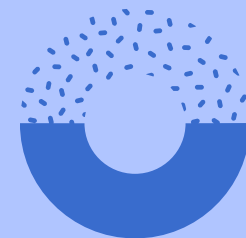
Problem Statement



Findings



Conclusion



Recommendation

OVERVIEW



- Serenity Health Center, situated in Nairobi, Kenya, is at the forefront of leveraging deep learning, specifically Convolutional Neural Networks (CNNs), to revolutionize the classification of pneumonia and normal lung conditions in medical imaging like X-rays and CT scans.
- Committed to delivering accessible and high-quality healthcare to the people of Kenya, Serenity Health Center stands as a modern, state-of-the-art hospital with a dedicated team of healthcare professionals.

PROBLEM STATEMENT

PROBLEM 1

Serenity Health Center recognizes the critical need for an efficient and accurate diagnostic tool for respiratory conditions, specifically pneumonia, which poses a significant health challenge in Kenya. The current lack of such a tool hinders timely diagnosis, thereby impacting patient outcomes and increasing healthcare costs.

PROBLEM 2

In Kenya, Serenity Health Center confronts the pressing issue of timely and precise diagnosis for respiratory conditions, particularly pneumonia. The absence of an effective diagnostic solution not only jeopardizes patient well-being but also contributes to escalating healthcare expenses, underscoring the imperative for a comprehensive diagnostic approach.





GOALS & OBJECTIVES

PNEUMONIA DIAGNOSIS ENHANCEMENT:

1. **Early Detection:** Detect pneumonia earlier for better outcomes.
2. **Reduced Misdiagnosis:** Minimize false results, ensuring accurate diagnoses.
3. **Operational Efficiency:** Speed up diagnosis and reporting for workflow improvement.
4. **Resource Optimization:** Efficiently use resources and automate initial screenings.
5. **Improved Patient Care:** Enhance patient care, cut costs, and build trust.
6. **Competitive Advantage:** Position Serenity Health Center as an innovation leader.
7. **Data-Driven Insights:** Utilize data for future healthcare strategies.

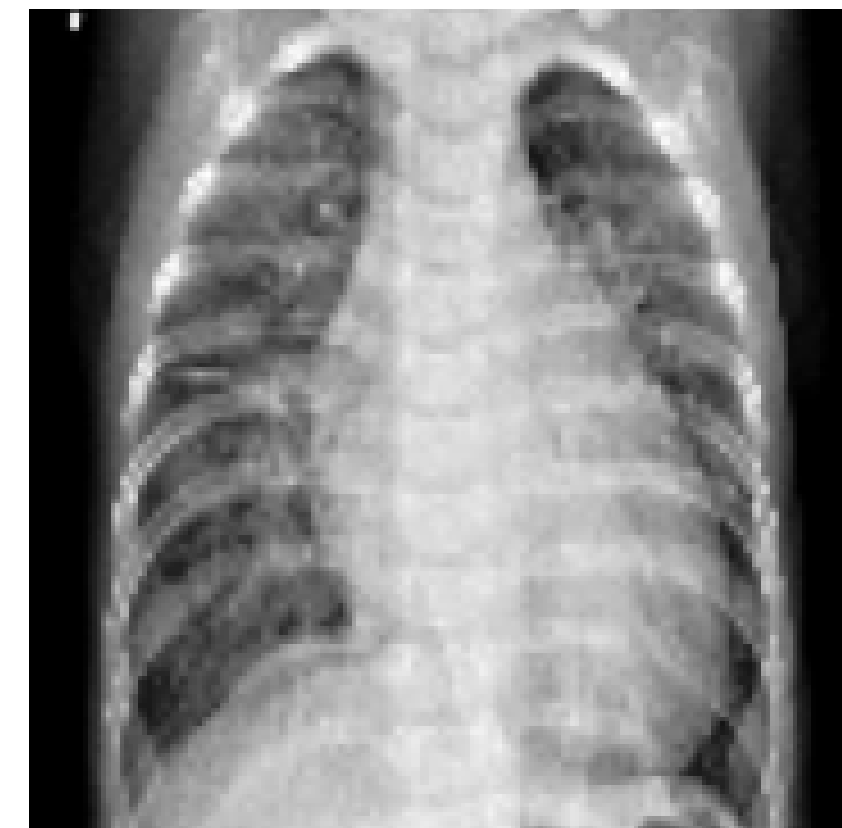
FINDINGS

- The normal lung image should appear clear and transparent, exhibiting minimal opacity.
- The size and shape of the normal lung image should be relatively uniform and symmetrical.
- Normal lungs generally display a symmetrical appearance.
- In contrast, pneumonia can introduce asymmetry, with certain regions, particularly the left lung, affected more than others.

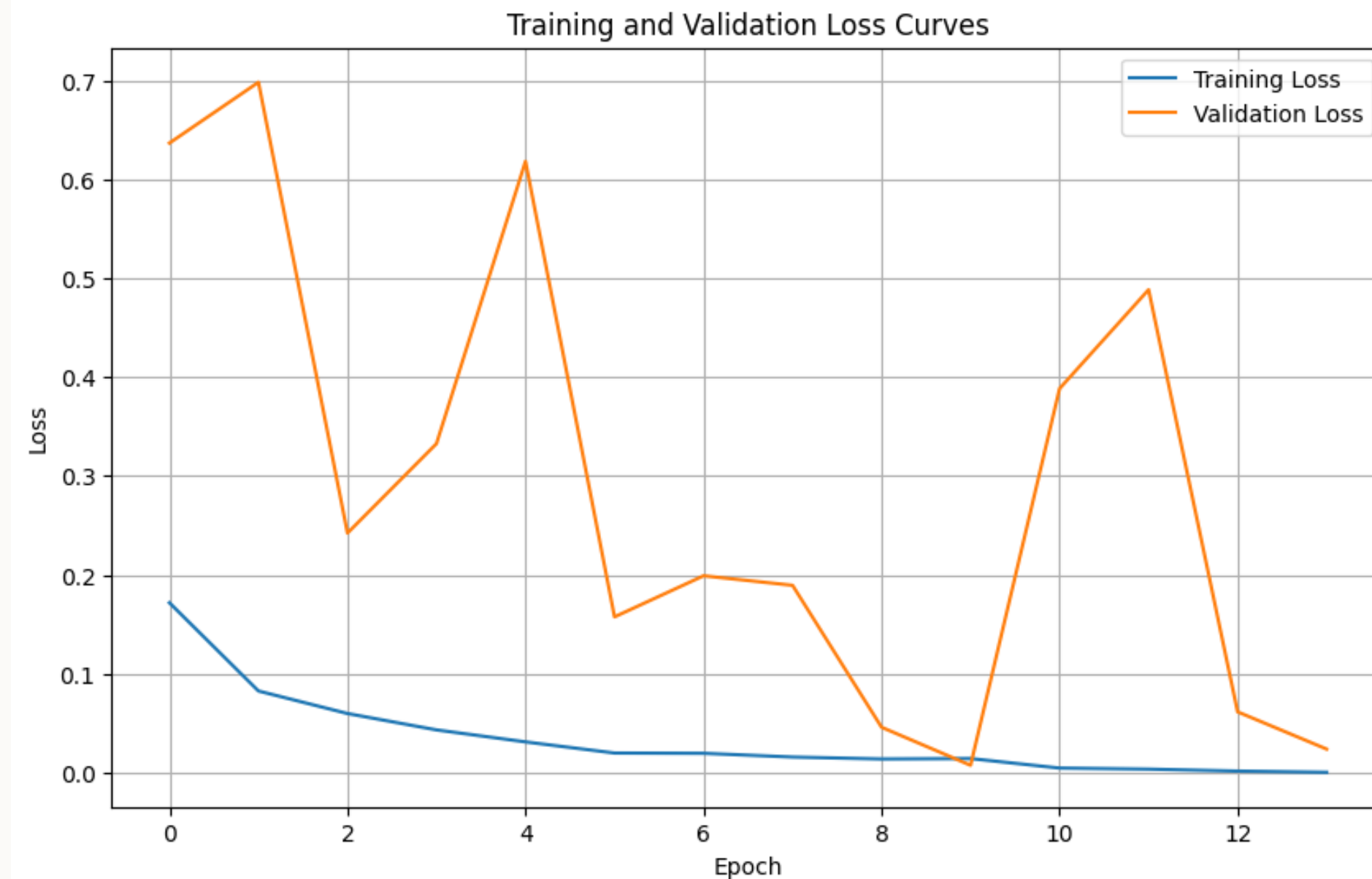
NORMAL



PNEUMONIA



MODEL PERFORMANCE



PERFORMANCE OF THE MODEL

we observe that the CNN model's performance is truly remarkable. It excels in fitting the training data, maintaining a consistently low loss of under 0.3 throughout.

However, when we turn our attention to the validation set, which is instrumental in guarding against overfitting, we find a noteworthy result. The model achieves its lowest loss at the 9th epoch, with a remarkably low value of 0.00731.

This outcome underscores the high accuracy of our model in effectively classifying X-rays.

CONCLUSION

- Image classification model: A powerful asset with an impressive 80% accuracy rate.
- Reflects Serenity Health Center's dedication to advanced technology for better patient care.
- Streamlines patient classification, easing resource demands.
- Enables optimized resource allocation and expertise utilization.
- Empowers healthcare professionals to concentrate on individualized patient care.
- Elevates Serenity Health Center as a regional industry frontrunner.
- Demonstrates an unwavering commitment to innovation and top-tier patient care standards.



RECOMMENDATION

- 1.Enhanced Accuracy: Deep learning improves pneumonia diagnosis for early, precise treatment.
- 2.Data-Driven Insights: Our project extracts valuable data for research and quality improvements.
- 3.Operational Efficiency: Automation eases healthcare professionals' workload, expediting image analysis.
- 4.Cost Savings: Enhanced accuracy reduces misdiagnoses, hospital stays, and treatment expenses.
- 5.Competitive Edge: Serenity Health Center's deep learning commitment distinguishes it from competitors, attracting top talent

