

# Pneumonia Detection and Classification using CNN and VGG16

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**Abstract:** *Pneumonia, an infectious disease caused by a bacterium in the lungs' alveoli, is frequently the result of pollution. A lung infection causes pus to build up in the affected tissue. Professionals conduct bodily examinations and diagnose their patients using a chest X-ray, ultrasound, or lung biopsy to determine if they have certain conditions. Misdiagnosis, incorrect treatment, and failure to recognize the disease will result in a patient's inability to lead a normal life. Deep learning's advancement helps specialists make better decisions when diagnosing patients with certain diseases. The research provides a flexible and efficient deep learning technique that uses the CNN model to predict and detect a patient who is unaffected. Using a chest X-ray photograph, the study applies a flexible and effective deep learning technique of using the CNN model in predicting and detecting a patient unaffected and affected by the illness. To demonstrate the overall performance of the CNN model being trained, the researchers used an amassed dataset of 20,000 photographs and a 224x224 photograph decision with 32 batch lengths. At some point throughout the total performance training, the trained version produced a 95 percent accuracy charge. The research study may detect and predict COVID-19, bacterial, and viral pneumonia illnesses based solely on chest X-ray photographs, according to the results of the testing.*

**Keywords:** Pneumonia Detection, Adaptive Deep Learning, Deep Convolutional Neural Network Architecture

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