

# Identify Type of Lung Infection from Lung Patients X-RAY Image Liveraging Computer Vision

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**Abstract:** Lung diseases represent a significant global health challenge, necessitating accurate and early diagnosis for effective treatment and improved patient outcomes. This paper presents a theoretical framework for identifying various lung diseases using deep learning techniques applied to X-ray images. Deep learning, particularly Convolutional Neural Networks (CNNs), has emerged as a powerful tool for medical image analysis, enabling the detection of intricate patterns and representations. By leveraging CNNs on X-ray images, our aim is to develop an automated system capable of detecting pneumonia, tuberculosis, lung cancer, and COVID, among other diseases. The proposed framework includes key components such as data acquisition and curation, preprocessing, optimized neural network architecture design, and training/validation processes. Ethical considerations regarding data privacy, fairness, and interpretability are integral to ensuring responsible AI usage in healthcare and building trust with stakeholders. Future enhancements include continual learning, integration with clinical decision support systems, and collaboration between radiologists and AI models. This research contributes to the discussion on the role of deep learning and AI in healthcare, laying the groundwork for practical implementations that could revolutionize lung disease diagnosis and improve global health outcomes.

**Keywords:** Deep Learning, Pneumonia, Lung Disease, X-ray, Lung Disease, Tuberculosis