NARAYANA ENGINEERING COLLEGE::NELLORE
(AUTONOMOUS)

Department of Electronics and Communication Engineering

LUNG DISEASE CLASSIFICATION AND DETECTION USING MACHINE LEARNING TECHNIQUES

Abstract:

Assistance for doctors in disease detection can be very useful in environments with scarce resources and personnel. Historically, many patients could have been cured with early detection of the disease. To assist doctors, it is essential to have a versatile system that can timely detect multiple diseases in the lungs with high accuracy. The goal of this project is to develop a system for the automated classification of lung diseases, specifically focusing on Viral Pneumonia, and Lung Opacity, using machine learning techniques. Early and accurate detection of these diseases is critical for effective treatment; however, manual analysis of chest X-ray is often labor-intensive and prone to human error. This project leverages Image Processing Toolbox and Deep Learning Toolbox to create a streamlined process for identifying lung diseases from medical imaging data. The system consists of four main stages: image preprocessing, feature extraction, model training, and classification. Image preprocessing involves resizing, normalization, and augmentation to enhance data quality. Model performance is evaluated using metrics such as accuracy, precision, and recall. This approach provides an efficient and reliable solution to assist healthcare professionals in early disease detection and informed clinical decision-making.

Components: MATLAB software, Image Processing Toolbox, Machine Learning Toolbox, Medical Image Dataset.

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