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Binary Classification of Tuberculosis CXR Images Across Diverse Range of CNN Architectures: A Comparative Study

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Abstract

This paper investigates the performance of widely used pre-trained CNN architectures (VGG16, MobileNetV3, DenseNet121, and RegNeto40) across diverse datasets, particularly focusing on tuberculosis (TB) detection using Chest X-Rays (CXRs). Deep learning (DL) techniques applied to CXRs aid radiologists in promptly and accurately identifying TB, which is especially critical in low-income regions with constrained diagnostic resources. The research reveals that MobileNetV3 consistently demonstrates superior performance compared to other architectures. © 2024 IEEE.

Author keywords

Artificial Intelligence (AI); Convolutional Neural Networks (CNNs); Deep Learning (DL); Machine Learning (ML); Pre-trained models; Tuberculosis (TB)

Indexed keywords

Engineering controlled terms

Architecture; Convolutional neural networks; Deep neural networks; Diagnosis; Learning systems

Engineering uncontrolled terms

Artificial intelligence; Convolutional neural network; Deep learning; Machine learning; Machine-learning; Neural network architecture; Performance; Pre-trained model; Tuberculosis

Engineering main heading

Network architecture

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