

**Title :** Transparent and Explainable AI Methods for Accurate Classification of COVID-19 and Pneumonia through the Integration of 3D Imaging and Deep Learning

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## ABSTRACT

This study utilizes chest X-ray images obtained from the University of Northern British Columbia and other sources. The research process begins with the study and analysis of two-dimensional images as a preliminary test. Subsequently, a three-dimensional analytical system is developed by applying deep learning techniques to classify images into three categories: COVID-19 infection, pneumonia, and normal (no disease). In the final phase of the study, the obtained results will be integrated with the concept of Explainable AI to enhance transparency and interpretability in chest X-ray image analysis. The system's performance will be evaluated using the Confusion Matrix to assess its accuracy and reliability. Additionally, medical professionals may be invited to test the system to further evaluate its practical applicability.

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