Automatic Lung Cancer Prediction from Chest X-Ray Image Using Machine Learning Techniques

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Lung cancer screening plays an important role in preventive care because cancer is curable when diagnosed at early stages. Although CT scan provides more medical information than normal chest X-ray, it is more expensive and has limited access in rural areas especially in underdeveloped countries. Recently, there is a trend in using computer-aided detection (CAD) to assist in screening and diagnosing of cancer from biomedical images which help both patients and the limited number of radiologists and doctors. In this study, the Densely Connected Network or DenseNet with transfer learning scheme was explored to develop deep learning model that would help in lung cancer diagnosis using chest X-ray images. By training the model on lung nodules dataset before training on the lung cancer dataset, the results improved significantly. The results from proposed model perform more than 75% of mean accuracy, specificity, and sensitivity. It also shows the heatmap that visualizes the location of lung nodules accurately. These findings are quite promising for further development of chest X-ray-based lung cancer diagnosis using deep learning approach.

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