Combination of texture and shape features to detect pulmonary abnormalities in digital chest X-rays

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The objective of the study is to improve detection of pulmonary and pleural abnormalities caused by pneumonia or tuberculosis (TB) in digital chest X-rays (CXRs). A method was developed and tested by combining shape and texture features based on which CXRs are classified into two categories: TB and non-TB cases. Based on observation, we found that radiologist interpretation is typically comparative between left and right lung fields, the algorithm uses shape features to describe the overall geometrical characteristics of the lung fields and texture features to represent image characteristics inside them. Our algorithm was evaluated on two different datasets containing tuberculosis and pneumonia cases. Using our proposed algorithm, we were able to increase the overall performance, measured as area under the (ROC) curve (AUC) by 2.4% over our previous work.

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