

# **Deep learning-based object detection approaches for common thorax disease detection in chest X-rays images**

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## **Abstract**

The purpose of this study is to use deep learning methods to mark abnormal parts in chest X-ray images and annotate possible chest diseases reflected by the abnormal parts. We use 1,635 chest X-ray images provided by the E-Da Hospital with disease labels and location bounding boxes for deep learning model building. Four different schemes are designed to perform chest anomaly detection. Four schemes are different in detecting all diseases in the image at once or each disease separately, and whether incorporating the binary classification. Three deep learning-based object detection models: Faster R-CNN, Mask R-CNN, and RetinaNet are used to predict disease extent and location, and the EfficientNet-B2 model is used for binary classification.

Keywords: chest X-rays, deep learning, object detection, binary classification