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# Training of U-Net on Chest X-Rays to Segment Lungs and Detect Tuberculosis

**S Siddhartha and S Sahana**
School of Electronics and Communication Engineering
Vellore Institute of Technology, Chennai, Tamil Nadu, India

**Abstract:** *Tuberculosis (TB) is caused by a bacterium (Mycobacterium tuberculosis), which primarily affects the lungs. Tuberculosis is indeed curable and preventable. Tuberculosis spreads through the air from person to person. When people with lung tuberculosis cough, sneeze or spit, the TB germs are expelled into the air. In order to get infected, a person only has to breathe a few of these bacteria. Roughly one-quarter of the world's population is infected with tuberculosis (TB), which means they have been infected by TB germs but are not (yet) unwell with the disease and cannot spread it. Therefore, taking this disease as our problem statement, we aimed to train a U NET, a convoluted neural network specifically used for image recognition and tasks involving processing pixel data. This neural network was specifically developed for biomedical image segmentation. In this study, we propose a method to train a U-NET on datasets which include 26 thousand of healthy and TB-affected lung X-Ray images. We then process them to first segment the lungs separately from the X-Ray by removing the unwanted data present in the picture like background and background noise. We later use augmentation to add more data to the model. Proceeding further, test data and training data are formed to train the model to detect abnormalities in the given lung X-Ray by comparing them to the preset parameters of a healthy lung CXR.*

**Keywords:** U-NET, Augmentation, CXR, Test and Training Data, Parameters

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