ABSTRACT

This final project is about tuberculosis and pleura effusion diseases detection using *2D Gabor wavelet filter* and *fuzzy logic*, because these diseases have specific characteristic that can be identified from X-ray picture.

Lungs diseases detection system in this final project consists of three parts, which are : Preprocessing which is contrast stretching used to increase the image quality that will be detected. The Feature extraction system is using *2D Gabor Wavelet Filter* to get the feature vector from an image that will be classified. The classification system is used to classify images into three conditions: normal, tuberculosis, and pleura effusion using *fuzzy logic.* After these three parts, the system are implemented, the next step is the training process using 60 images. Then the system will be tested using 60 different images.

The accuracy from the system in this final project is 100% for training images, which each class consists of 20 training images. The accuracy from the testing images is 90% for all images, which each class consists of 20 testing images, 100% for normal condition, 100 % for pleural effusion, and 70% for tuberculosis.

Key words : **tuberculosis (TBC), pleura effusion, *contrast stretching*, *gabor wavelett*, *fuzzy logic***.