CHAPTER V
CONCLUSIONS AND FUTURE WORKS

This chapter presents the conclusions of the current research based on the results described in the previous chapter, some recommendations also proposed for further research.

5.1 Conclusions
1. A method of lung cancer detection system has been developed by using Haralick Features of Gray Level Cooccurrence Matrix as feature extraction method to get the ANFIS input data from initial Chest X-Ray image for cancer detection purpose in imaging test. Before extracted, the image are processed through several stages, i.e. (1) Resizing, (2) Grayscale, (3) Histogram equalization for contrast enhancement, (4) Lung segmentation based on their region of interest, and (5) Image matrix reduction by specific reduction factor.

2. 9 Haralick features (Energy, Correlation, Contrast, Entropy, Inverse Diff. Moment, Sum Average, Sum Variance, Sum Entropy, Difference Average) are appropriate as data input in ANFIS as information of malignant cell present in the lung.

3. Based on testing results, ANFIS parameters with 6 inputs features (Energy, Correlation, Contrast, Entropy, Inverse Diff. Moment, Sum Average) and 2 generalized bell membership functions perform the best results for chest X-ray image with reduction factor of 100 with 6 misclassified from 25 inputs. In the other hand, the image with reduction factor of 150 can produce the better results with 2 misclassified from 25 data for ANFIS with 9, 8, 7, and 6 inputs.
5.2 Future Works
1. Other research for lung cancer filtering test based on medical history and image processing of lung CT-Scan image may be held for develop the expert systems of complete lung cancer diagnosis process.
2. Method in the current research might be applied as detection systems for other disease in the lung where X-Ray scan is involved, such as bronchitis and tuberculosis
3. Other method can be used as feature extractions in order to obtain the numerical information of processed image, such as Principal Component Analysis (PCA) and Support Vector Machines.