ABSTRACT

Breast cancer is the second most lethal cancer for women in Indonesia. The goal of mammography is to provide early detection of breast cancer. Mammogram is the image produced by mammography which is the existance of cancer is showed by mass and micro-calcification. The using of digital image processing helps the radiologs to diagnose mammogram based on software.

This project aims to produce a tool to diagnose mammogram and classify breast cancer into normal, benign, or malignant type of class, besides to analyze performance of statistical feature and Gabor wavelet filter. Generally, the system of breast cancer detection consists of two main parts, i.e. feature extraction using statistical approach and filter Gabor wavelet, and feature classification using Learning Vector Quantization (LVQ) neural network. In preprocessing, from mammogram, sub-image of mammogram is produced using morphology operation. Thus, result of sub-image of mammogram, which are global region (breast) and local region (mass and micro-calcification,) is calculated using statistical approach and Gabor wavelet filter to get unique features. These features are recognized used LVQ neural network.

Previous research that applied the Euclidean method resulted in 70% of accuracy, others that tried to apply the Coiflet 5 method with a BP neural network resulted 87.5% of accuracy, and others that tried to apply the Symlet 8 method with a BP neural network resulted 86.67% of accuracy. This project applying statistical approach and Gabor wavelet filter as a performance comparison. The best accuracy is reached by using Gabor wavelet filter with 24 feature variations and gained-feature obtained the accuracy of breast cancer detection is 100% for training data and 70% for testing data set.

Key words   : Breast cancer, mammogram, statistical approach, Gabor wavelet filter, gained-feature, LVQ neural network.