ABSTRACT

Causes of death worldwide is cancer, one of example is prostate cancer that most commonly affects the men. Today, prostate cancer is increased because of increasing patients infected. With increased number of patients, so it can make classification prostate cancer using Principal Component Analysis (PCA) method and Least Squares Support Vector Machine (LS-SVM) method .

This final Project, the data of gene expression has thousand dimension to reduced by using PCA method. Based on the result of data reduction used to classify using LS-SVM method. While analysis and implementation of measurement accuracy (classification accuracy), the accuracy of the desired events (sensitivity), and undesirable events (specify) is done by using the confusion matrix.

Result of reduction for data training is 12.600 dimension that can be summed up to 94 PC and for data testing is 12.600 dimension that can be summed up to 32 PC. Test of system use sum of PC by 32, 24, 16, 8, 4, 3, 2, 1 PC to procces of classification. Overall result of classification system generate an average accuracy 61,364% with best time of computation 0.819785 second for Linear and 72,7273% with best time of computation 0.839288 second for RBF kernel. From the testing performed merging PCA method and LS-SVM can be used to get classification result from possessed dimensions.

Kata Kunci : Prostate cancer, *Principal Component Analysis* (PCA), *Least Square Support Vector Machine* (LS-SVM), *classification accuracy, sensitivity, specificity.*