

## **ABSTRACT**

*Disease is one of the highest death cause for society . Some diseases can be categorized as deadly disease. Colon tumor and leukemia are few examples of dangerous and deadly diseases. People sometimes don't realize that they're infected by these dangerous diseases. Based on this problem, it's a necessary to have a colon tumor and leukemia prediction system. In this final project, it uses differential evolution (DE) and Least Square Support Vector Machine (LSSVM) algorithm to predict colon tumor and leukemia diseases. The data that will be used in this final project is a high dimensional data of diseases, where it will be preprocessed with PCA so that it produce new data with smaller dimensions. The reduced data will be inserted into DE algorithm , where the algorithm will do series of evolution processes. DE intended to find optimal LSSVM parameters. These parameters then will be used on LSSVM classification method. This process is done to produce classification for colon tumor and leukemia. From the testing results on DE and LSSVM algorithm it obtain the optimal solution that 90.4762% accuracy colon tumor and 87.5 % for leukemia*

*Keywords: High dimensional data, PCA, Differential Evolution (DE), Least Square Support Vector Machine (LSSVM).*