# ABSTRACT

*Tuberculosis (TB) has become a very lively topic of discussion in the world of health. Because TB is a dangerous disease that has the highest mortality rate in Indonesia. Examination that is often used to diagnose tuberculosis is the field of light microscopy on the sputum of TB sufferers. The examination was carried out manually by laboratory experts from several fields of view and counted the number of tuberculosis bacteria in those fields of view. However, the examination that is currently being done really requires accuracy to get maximum results. The research on the system to be made, it is expected to help speed up and simplify the work of laboratory experts and avoid visual exhaustion and diagnostic errors.*

*In this final project, calculation the number of tuberculosis bacteria used is the calculation of acid resistant bacteria with 100 field of view microscopic examination, and the sample data to be processed is the sample data of TB patients in the Jambi area. Then image segmentation is performed in the CIELab color space. The results of the image segmentation will then be performed feature extraction using the Binary Large Object (BLOB) method, and then classified using the K-Means Clustering and Support Vector Machine (SVM) method. The classificatipn stage two methods are used to determine the best performance accuracy.*

*The data to be processed are 90 data, 30 positive data, 30 scanty data and 30 negative data. This study uses 63 data for training data and 27 test data. In this study the parameters used to determine system performance are the level of system accuracy and computational time. This study obtained an accuracy rate in the K-Means Clustering method of 88% with a computing time of 0.11 seconds with a positive precision value of 75%, scanty and negative 100% and a positive and negative recall value of 100%, scanty 66%. The Support Vector Machine method has an accuracy rate of 96% with a computing time of 0.11 seconds with a positive precision value of 90%, negative and scanty 100% and a positive and negative recall value of 100%, scanty 88%.Thresholding method obtained 100% accuracy with a computing time of 0.09 seconds.*

**Keywords**: *Tuberculosis (TB), CIELab, Binary Large Object (BLOB), K-Means Clustering, Support Vector Machine (SVM).*