ABSTRACT

One of the diseases that still need attention until now is malaria. Based on data from the World Health Organization (WHO), it is estimated that there are 240 million cases worldwide with an estimated total death of 627,000 cases in 2020, most of which occur in Africa. Malaria is a disease caused by the Plasmodium parasite that infects red blood cells in humans. Generally, the process of transmission of malaria occurs through the bite of a Anopheles . One way to cure malaria is to detect malaria early so that malaria can be cured before it gets worse. However, the problem that occurs is that the process of detecting and classifying malaria currently still takes a long time and requires people with high accuracy and flight hours to get good accuracy, especially with a large number of samples.

This Final Project proposes the process of detecting malaria and classifying malaria using a Deep Learning approach, namely using CNN with EfficientNet architecture as feature extraction and Support Vector Machine (SVM) algorithm for malaria classification. The dataset used in this Final Project amounted to 2101 images consisting of two classes, namely the Infected and Non-Infected malaria classes.

In this final project, research is carried out using a dataset of 2101 images which will be divided into 1575 training images and 526 test images. The test scenarios carried out in this study are to compare the EfficientNet with EfficentNet-SVM and to test the effect of images without pre-processing with images using pre-processing where the pre-processing used is Contrast Limited Adaptive Histogram Equalization (CLAHE), Gaussian Filters, and Gamma Correction. The best performance in this Final Project was obtained by using the EfficientNet-SVM without pre-processing with 96% Accuracy, 96% Precision, 96% Recall , and 96% F1 Score .

Keywords: Malaria, *Deep Learning*, EfficientNet, SVM.