

ABSTRACT

Malaria is one of the health problems that threatens the death of the community, especially in high-risk groups, namely infants, toddlers and pregnant women. The most common method of detecting malaria is to check it manually and it takes a long time. Malaria treatment must be handled appropriately and quickly to avoid malaria transmission and prevent further complications. Image processing can be used to help detect malaria in human blood cells.

In this final project using the Deep Learning Convolutional Neural Network (CNN) method which will clarify the analysis of paramedics to be able to detect malaria through digital image processing of human blood cells. The architecture used in this method is the Visual Geometry Group-16 (VGG-16). VGG-16 has 16 layers consisting of 13 convolutional layers and 3 fully-connected layers. The data used are 540 data consisting of Parasitized and Uninfected classes with 270 data for each class.

The data used in the final project research is 540 data which is then divided into 405 training data and 135 validation testing data. In this study, the most optimal search parameters were carried out from the total image size, optimizer, learning rate, and epoch. The results based on the simulation and the best scenario, the results of the most optimal validation testing accuracy are 97%, precision 97%, recall 97.5%, F1 Score 97% and loss of 0.11. These results are obtained by using parameters of image size 128*128, Nadam Optimizer, Learning rate 0.0001 and Epoch 75.

Keywords: Malaria Detection, Digital Image Processing, CNN, VGG-16