ABSTRACT

Malaria is a large parasite disease worldwide with the worst risk of death. The cause of malaria is a protozoan parasite of the genus Plasmodium which is transmitted by the bite of a female anopheles mosquito. Parasites will divide and multiply to infect red blood cells in the human body. Accurate diagnosis and early detection of paratisized or uninfected malaria can help the healing process and avoid the worst effects of malaria. Therefore, an early detection system is needed that can provide information to the public in identifying whether malaria is paratisized or uninfected. Thus the community will get fast and precise medical treatment.

In this final project will be tested using training data and validation data in the form of microscopic images for malaria infected and uninfected conditions with the Convolitional Neural Network (CNN) method as a classification algorithm. The input data will be operated using 4 convolutional layers, where each convolutional layer has a different number of filters and the same kernel size, which is 3 × 3. The classification stage uses 1 fully connected layer and the sigmoid activation function to classify it into 2 conditions, namely parasitized and uninfected.

The amount of data used in this study amounted to 600 microscopic image data taken from www.kaggle.com. Image data is divided into 450 training data and 150 validation data. System performance will be measured by analyzing the effect of the output channel, number of hidden layers, optimizer and learning rate.

The results obtained in the best conditions get the value of accuracy, precision, recall, and f1-score, namely 98.7%, 98.6%, 98.6% and 98.6%, respectively. The best value is obtained from the highest accuracy showing results that are not overfitting or overshooting.

Keywords: Malaria, Microscopic Image, Convolutional Neural Network, image processing.