ABSTRACT

Malaria is a disease that causes high mortality in tropical countries. The diseases is caused by the proliferation of *Plasmodium Vivax*, *Plasmodium Faciparum*, *Plasmodium Malariae*, and *Plasmodium Ovale* in the blood. This deadly disease can strike anyone so that the diagnosis of malaria should be extra careful, not to mention doctors.

Hence, the final task was made a simulation program detection and classification of malaria through red blood cells microscopy image. The design of the malaria parasite detection system using a method based on digital image processing. Having obtained the characteristics of the image of red blood cells then graded based on the image area ratio of infected cells. Information obtained from this process are ratio and wide of infected cells. Once information is obtained then the image is ready to be classified, then do a comparison between the results of manual and automatic clasification.

The tests on this system using three kinds of parameters, namely window size variation, the adaptive threshold value C, and threshold of labeling. The best accuracy rate obtained by the system when ws = 65 for *Plasmodium Vivax* 80% and normal cells 100%, while the best accuracy for *Plasmodium Falciparum* is 90% when ws=95.

Keywords: malaria, microscopy image, digital image processing, thresholding