

ERYTHROCYTE SEGMENTATION FROM THIN BLOOD SMEARS MICROPHOTOGRAPH

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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Malaria has become global disease and all countries around the world have tried to make their country free from malaria disease. Development of computerized diagnosis of malaria is needed to help solving the malaria problem. Thin blood smears image that infected with *Plasmodium falciparum*, the most deadly malaria parasite, has been chosen as input image for this research. By performing some image processing algorithm like morphological image processing algorithm and thresholding method, the expected result is high accuracy in detecting erythrocyte in blood image. Otsu thresholding is chosen as thresholding method in this thesis. From the data that has been gathered after doing blood cell segmentation step, there were a lot of components of blood that founded and one of them is overlapping cells. To solve this problem distance transform and watershed algorithm were applied. The problem with overlapping cell with clear concavity already solve with distance transform and watershed method. After the segmentation, each cell is saved as single image and they can be classified based on the class. The accuracy of the system in recognizing erythrocyte correctly is 99%.

Keywords: malaria, thin blood smears, image segmentation, Otsu thresholding, distance transform, watershed.



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DEDICATION

I dedicate this thesis to, first and foremost, Jesus Christ who is my guidance of my life. In addition, to my country Indonesia, my lecturers, my friends, and my family who helps me make decision when I confuse.



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